CASLAN METIS SETTLEMENT
Land Use Planning Inventory

Alberta
MUNICIPAL AFFAIRS

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ACKNOWLEDGEMENTS

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There are numerous individuals from other government agencies and the private sector who provided valuable input and review of the initial draft of this report. Their names are listed in the reference section at the back of this report.

This report also represents the work of many members of the staff from Alberta Municipal Affairs. Brian Novak and Piers Churchill of Planning Support Services prepared the maps and charts. Mike Sword and Al McCully provided suggestions, criticism, and ideas throughout the report. Word Processing provided the typing services.

Stanley Verbisky

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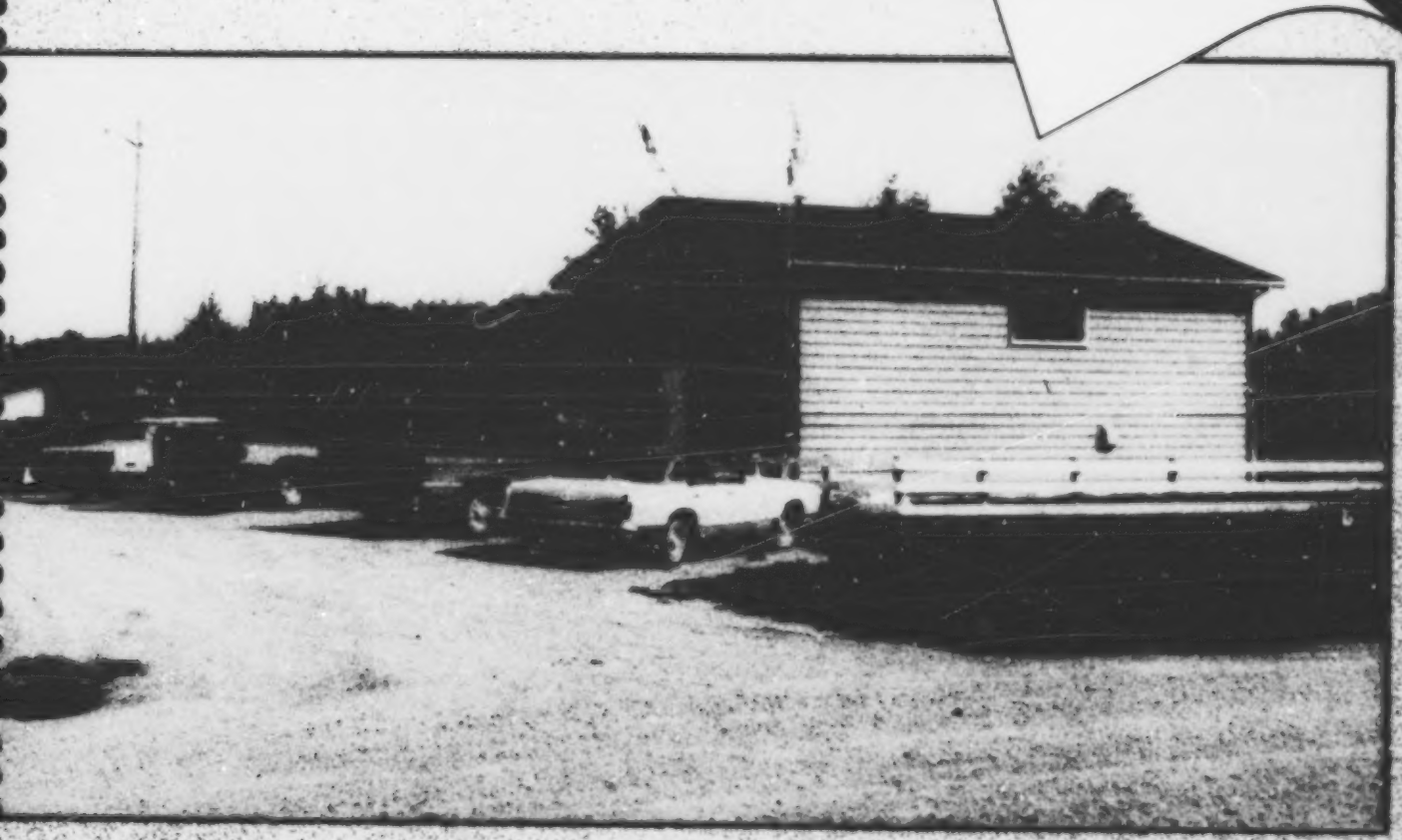
EXECUTIVE SUMMARY



1.0 Executive Summary

The primary purpose of this report is to inventory and analyze the major physical and cultural resources of the Caslan Metis Settlement.

This report was prepared by the Planning Branch for the Metis Development Branch, Alberta Municipal Affairs and the Caslan Metis Settlement Council. The report is an information base which could serve as the first phase of a planning process. It is expected that this report will be used by the Federation of Metis Settlement Association, Settlement residents, government agencies, and the private sector in making decisions related to the Settlement.

The Caslan Metis Settlement is located 30 km (18 mi.) east of the Village of Boyle and covers an area of 350 km^2 (135 sq. mi.). It has a population of 655 (1983). The majority of the population lives on agricultural parcels along developed roadways.

The culture and lifestyle of the Settlement residents is still quite closely linked to the environment. Many of the families still obtain a portion of their food from the land through fishing, hunting, gardening and berry picking. Due to the lack of full time employment opportunities, the incomes of the families are quite small. However, combining seasonal employment (construction, heavy equipment operation, and firefighting) with other activities such as farming provide the families with a living.

The intent of the remainder of this summary is to highlight the existing situation and indicate development potential. This summary will also provide suggestions for actions to be taken which could maximize the development potential of the Settlement's resources.

1.1 Petroleum and Natural Gas

There are 3 producing gas wells, 9 potential wells, and 7 abandoned wells. As the Energy Resources Conservation Board only publishes reserve information for designated fields, no reserve information is available for the area within the Caslan Metis Settlement.

1.2 Sand and Gravel

Untapped sand and gravel deposits exist on the Settlement.

- The commercial viability of known sand and gravel deposits should be evaluated.

1.3 Peat Moss

Preliminary surveys indicate the existence of extensive peat moss reserves.

- The commercial and industrial potential of these known deposits should be investigated.

1.4 Domestic Water Resources and Supply

Ground water supplies have been generally adequate only in the north-west part of the Settlement. The water quality here is fair due to hardness, high sulfate concentrations, and the presence of iron. Groundwater outside this northwest corner has been found after deep drilling and the quality appears to deteriorate. No wells have been drilled in undeveloped areas of the Settlement.

- It is suggested that Settlement residents planning to locate on new farm properties be made aware of any limitations to water quality and quantity in the area.

1.5 Agricultural Development

Approximately 1300 acres of land are used for agricultural purposes. This figure includes land for grain, hay and pasture. About 30 families have some interest in farming, with a lesser number actively involved in this occupation.

The agriculturally related conditions that limit the opportunities for viable farming operations include: adverse climate; rolling topography; and, poor soil fertility. These factors tend to limit the selections of crops that can be raised on the Settlement. For example, wheat is unsuitable for the area, but barley and oats may be grown if proper management practices are followed. Most legumes may be successfully grown.

The socio-economic limitations are such factors as small parcel size; shortage of capital; lack of proper farm equipment; difficulty in obtaining credit; and, not using good farm practices. To reduce the physical and socio-economic limitations, the following actions should be taken:

- A detailed agricultural inventory should be undertaken on the Settlement. Settlers and Council should take advantage of Advisory services of the District Agriculturist to (i) prepare an agricultural strategy for the Settlement, and (ii) obtain day-to-day agricultural management advice.

- Settlement residents interested in farming should be encouraged to take all available agriculturally related courses.

- Residents involved in farming should consider joint purchase and utilization of farm equipment as a means of maximizing its usage, and of reducing the high initial purchase costs.

- Council should consider ways to increase utilization of existing parcels.

- All Settlement residents with demonstrated farm skills and adequate capital should be provided an opportunity to farm.

- Consideration should be given to agricultural products that are unique, but readability adaptable to the area. Honey, blueberries, and wild rice are examples.

- Prior to allocating new agricultural parcels, detailed tests should be taken, legal surveying completed, ground water capability established, forestry capability determined, recreational potential identified, and road access and powerline extensions planned.

1.6 Forest Development

Aspen and balsam poplars are found in various quantities in all areas of the Settlement, while fir and white spruce are found in limited quantities mostly in the unsettled areas. The majority of the Settlement area has a moderate forest capability (C.L.I. Class 4), while the balance consists of a lower capability (C.L.I. Classes 5, 6, and 7). According to the Canada Land Inventory, the inherent local conditions which hinder higher timber yields include low soil fertility, moisture excesses, and moisture deficiencies.

- An up-to-date timber inventory should be undertaken.
- Council should consider implementing a reforestation program to enhance the feasibility of creating a forest-based industry that will employ local residents.

1.7 Wildlife Resources

Moose, mule deer, and white-tailed deer are frequently sighted on the Settlement. Some hunting of these species occurs for domestic use. A small number of residents trap fur-bearing animals to supplement their incomes.

Local hunters indicate that the best hunting area for moose, mule deer, and white-tailed deer is in the area east and south of Buffalo Lake. The Canada Land Inventory gives a major portion of this area a C.L.I. Class 2 rating. The land related limiting factors include: lack of nutrients for plant growth; adverse topography; and, poor landforms.

- The possibility of setting up a game ranching operation should be studied. It could contain mixed species (buffalo, moose, and deer). Ranches of this nature could serve to provide employment to local residents, a meat source, and revenue through sale of animal products.

1.8 Population

The 1983 census sponsored by the Metis Development Branch indicates a population of 655, an increase of 157 over the previous year. A similar census undertaken in 1982 indicated a decrease of 76 over the year before. Fluctuations of this nature have been occurring over the years. While some of the population fluctuations could possibly be due to census procedures, the majority are due to in-migrations and out-migrations of the Settlement residents.

The structure of the population is changing. While the number and percentage of pre-school children is declining, the number and percentage of adults is increasing. This changing population structure is largely the result of the decline in family size which decreased from 6 in 1974, to 4.6 in 1983.

In-migration and natural population increase are the two factors that will influence population change on the Settlement. With the decline in family size and the large number of Settlement members living off the Settlement, in-migration will likely be the more important factor in influencing population change. In-migration could be affected by such internal and external factors as:

i) the availability of agricultural land for development and occupancy;
ii) the availability of employment opportunities on the Settlement, or near the Settlement;
iii) high off-Settlement housing and farm land costs; and/or
iv) possible transfer of sub-surface mineral rights by court decision to the Settlement.

- Social programs and community facilities, which reflect the changing population structure, should be initiated.

1.9 Employment

On-Settlement employment includes work in farming, trapping, construction, brushing and clearing, and administration. Off-Settlement employment includes work in construction, heavy equipment operation, oil and gas-related business.

With the limited job opportunities on the Settlement, and competition for employment in off-Settlement work, the employment opportunities for the Settlement residents do not appear to be good in the short term.

- Efforts should be made to provide Settlement residents with employment on a full-time or part-time basis close to the Settlement.

- Council should initiate job training programs for the Settlement residents to help make them more employable.

1.10 Housing

In recent years the following housing programs have been implemented: the Metis Development Branch (MDB) housing program; the Rural Mobile Home Program (RMHP); and, the Rural Home Assistance Program (RHAP). The RHAP is the primary funding source with material grants (up to $18,500) and assistance programs (federal and provincial) for labour costs. The ERP (Emergency Repair Program) and the SHIP (Senior Citizens Home Improvement Programs) are two home repair programs available to the Settlement residents.

The present housing stock includes 39 MDB homes, 45 RHAP homes, 12 RMHP trailers, and 14 funded by other sources. The RHAP homes are generally in good condition, while the MDB homes are generally in poor condition. In 1984 there were applications for 28 new homes, and only 6 were constructed.

- Suggestions for reducing the housing shortage and improving the existing housing stock include:

i) accelerating the number of RHAP houses built each year;
ii) providing additional trailers (RMHP);
iii) repairing existing homes using ERP or RHAP funding; and
iv) encouraging Settlement residents to build their own homes.

1.11 Infrastructure

There is approximately 69 km (43 mi) of roads on the Settlement. This figure includes the portion of Highway 855 located on the Settlement and some farmstead access roads. Generally, these roads are in good to fair condition. Electricity and telephone services are available to most residents located along developed roadways. Homes are heated with oil, wood, or propane. A limited number of Settlement homes are equipped with indoor plumbing. Funds for garbage collection have been allocated for the 1983/84 fiscal year and modified land fill sites (nuisance grounds) exist in the Settlement.

Recreational facilities include: skating rink, ball diamonds, and rodeo grounds. Other community facilities include: a Settlement office, two churches, a community centre, and a senior citizens centre. There are no retail outlets on the Settlement at the present time.

- In planning new road networks, Council should consider such factors as agricultural capability, forestry potential, recreational potential, powerline and telephone availability, and groundwater supply and quality.

- Development of a new recreation site with rodeo grounds and playgrounds should proceed.

1.12 Hamlet

The hamlet currently functions as the administrative centre of the Settlement, but it is not a strong residential focus. A new water treatment plant, which was completed recently, will supply water to all the community facilities in the hamlet. A community centre with provisions for recreational, administrative, and commercial uses will be ready for occupancy in the fall of 1984.

- Council should prepare a plan to function as a guide for future development and land use in the hamlet.

- Residential development should be directed to an area near the hamlet to strengthen its role as the centre of the Settlement.

INTRODUCTION

2.0 Introduction

The purpose of this report is to inventory and analyze the major physical and cultural resources in the Caslan Metis Settlement. The Planning Branch prepared this document for the Metis Development Branch and Caslan Metis Settlement Council for use as an information base in future land use and development planning.

It is expected that this report will be used by the Federation of Metis Settlements Association, Settlement residents, government agencies, municipalities, and the private sector. To satisfy the needs of the various users, the writer, after reviewing similar documents for other Settlements, has decided to include the following:

i) A land use inventory that is acceptable to the Metis Development Branch, understandable to the Caslan Metis Settlement Council, and of value to users in both the public and private sectors.
ii) Data on physical and human resources that could serve as starting point for any future planning processes.
iii) An inventory of existing conditions and development potentials on the Settlement.

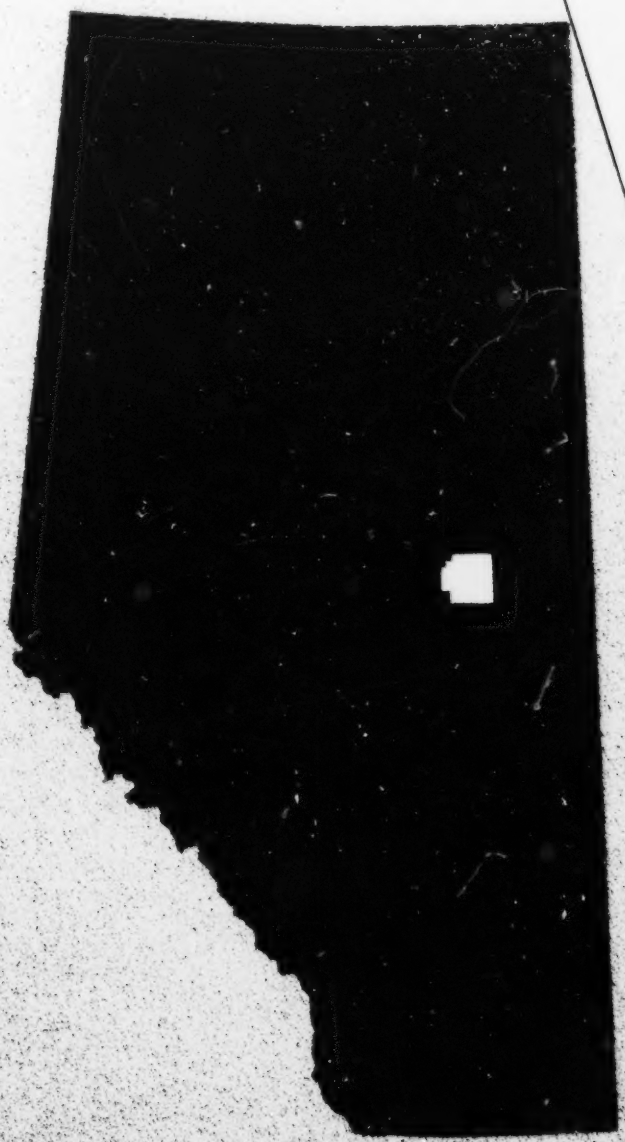
The report is organized as follows: Chapter One will provide an executive summary. Chapter Two outlines the purpose, intended use, organization, methodology, and limitations. Regional context is discussed in Chapter Three. Chapter Four examines the physical resources including sections on climate, topography and drainage, geology, domestic water resources and supply, soils and agriculture, forestry and wildlife resources.

Maps are provided illustrating the locations of physical resources, existing land use, and potential uses. Chapter Five discusses human resources and includes sections on population and employment. Chapter Six provides data in and analysis of housing and infrastructure services. The roads and the powerlines are mapped. Chapter Seven focuses on the Settlement hamlet. The pattern of building locations is mapped, and growth potential discussed. Chapter 8 suggests future uses of the undeveloped areas of the Settlement.

The methodology involved the collection of data from all available sources. This included meetings and/or interviews with the Settlement Council, Settlement staff, Metis Development Branch, other government staff, and private consultants. The data collected from these sources was analyzed as to its relevance and applicability to conditions on the Settlement. To simplify presentation of the Canada Land Inventory data, some of the classes and subclasses were grouped to better illustrate those areas of the Settlement which contain a higher capability for the production of forestry products. For each resource sector the existing conditions and future prospects are discussed.

There have been no recent inventories of the physical and cultural resources of the Caslan Metis Settlement. This required the development of new data sources for the preparation of this inventory. Much of the available data from these sources were found to be incomplete, outdated, and even conflicting. Because of these inadequacies in data, it is anticipated that minor errors or omissions may occur in this report. Despite these limitations, this inventory provides an initial information base which can be added to or revised as development occurs.

REGIONAL CONTEXT



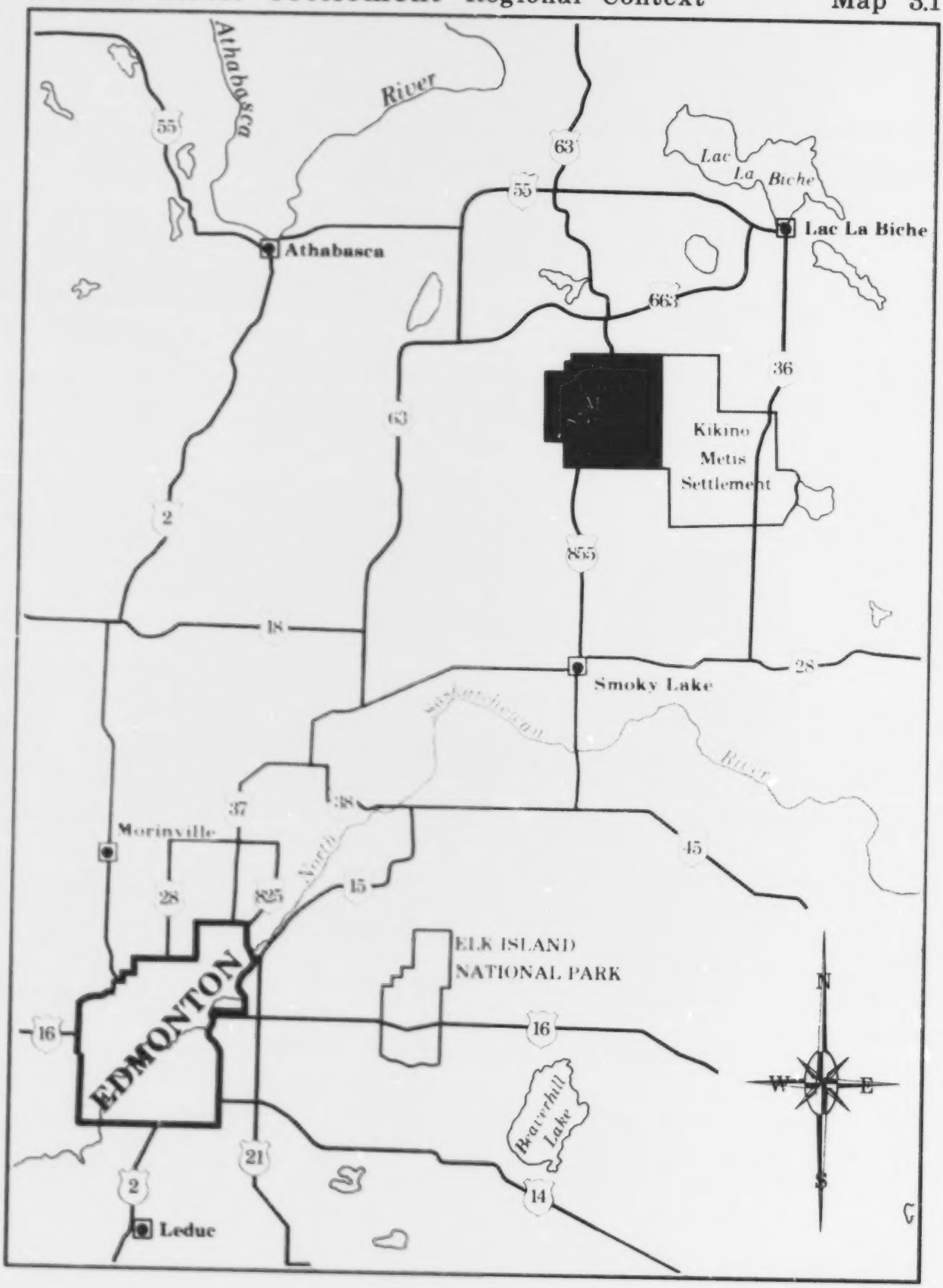
3.0 Regional Context

The Caslan Metis Settlement is located 50 kilometers southwest of Lac La Biche, and is about 30 kilometers east of Boyle. Map 3.1 shows the Settlement's location relative to existing municipalities.

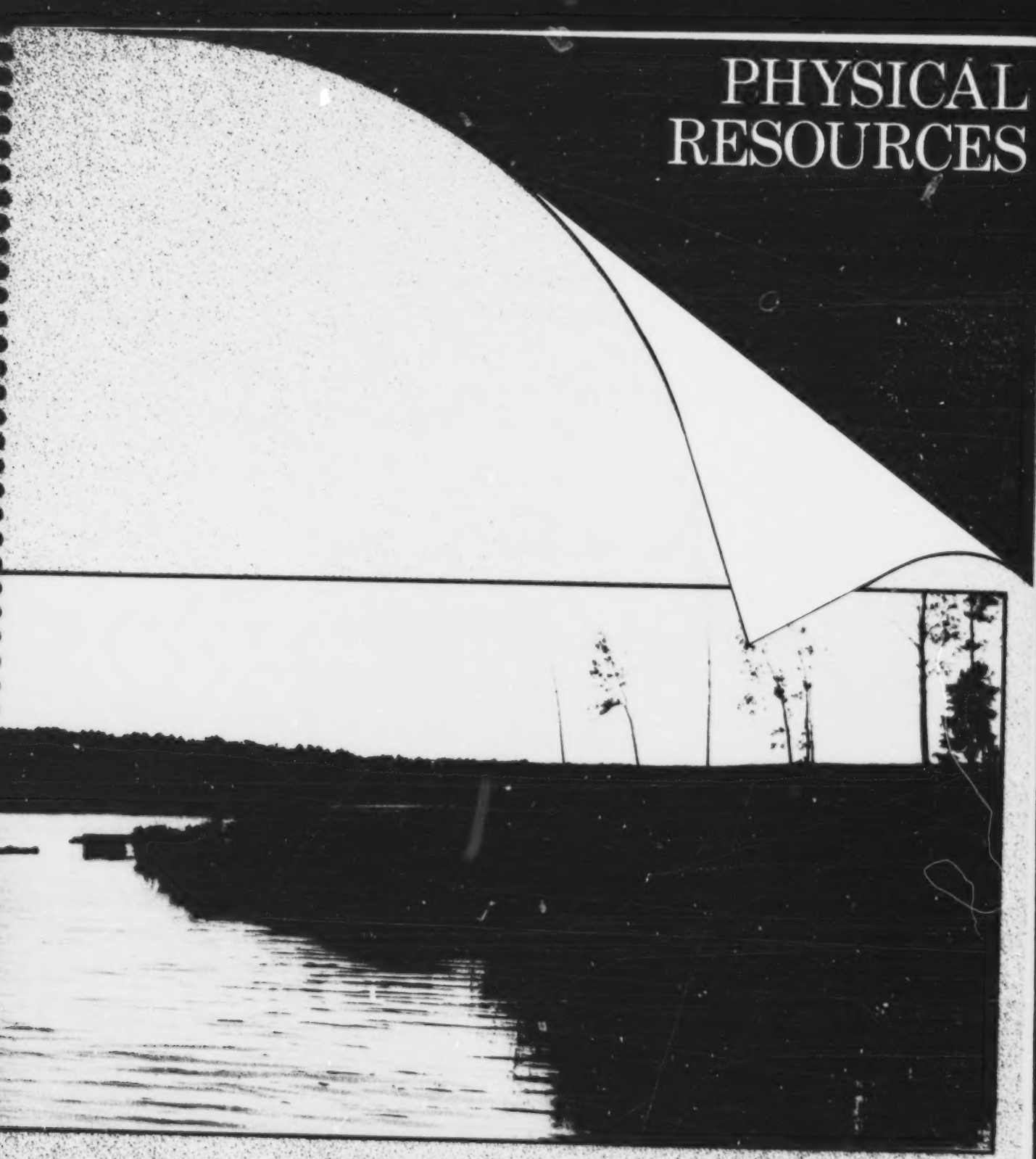
Caslan borders the Kikino Settlement and is sometimes called Kikino #7 West. The Settlement covers 34,803 hectares (86,0000 ac.), or approximately 350 km^2 (135 sq. mi.).

Caslan Metis Settlement Regional Context

Map 3.1



PHYSICAL RESOURCES



4.0 Physical Resources

4.1 Climate

The region around the Caslan Metis Settlement has a continental type climate characterized by warm summers and cold winters. January is the coldest month while July is the warmest. The growing season (above 5.6 C or 42 F mean temperature) starts in late April and ends at the beginning of October (Kjearsgaard, 1972).

Mean Annual Temperature — 1980 Table 4.1

	J	F	M	A	M	J	J	A	S	O	N	D
Athabasca	0.3	0.5	0.3	11.6	43.6	75.3	102.9	79.0	47.9	1.0	1.4	1.4
Lac La Biche	0.5	0.2	2.1	4.9	30.5	87.1	90.0	74.0	51.9	17.2	1.8	4.9
Newbrook	1.0	0.4	2.3	7.8	35.9	77.3	84.6	75.1	51.8	12.3	2.3	1.6
Vilna	3.8	1.0	0.2	10.4	40.6	69.3	80.1	86.5	43.7	13.7	1.1	1.6

Annual Totals Athabasca 365.2 Lac La Biche 365.1 Newbrook 352.4 Vilna 352.0

SOURCE: CLIMATE OF ALBERTA REPORT FOR 1980, ENVIRONMENT CANADA.

As there are no climatological datum for the area covered by the Caslan Metis Settlement, available records for Athabasca, Bellis, and Lac La Biche will be used to indicate conditions on the Settlement. These communities are located in different directions from the Settlement area, and all are within 55 km of the Settlement office. Table 4.1 indicates the mean monthly temperatures for the three communities. The temperatures of these communities for the growing seasons appear to be quite similar, and it is expected the temperatures on the Settlement will be within the same range.

The number of frost free days during the growing season is an important factor in the region's ability to grow crops. Agro-climatic maps are useful tools in determining the number of frost-free days in a particular area. "Agro-climatic areas are ones wherein soils have similar surface characteristics and fertility requirements - and wherein climatic conditions, including frost hazard, are very similar" (C.F. Bently, T.W. Peters, A.M.F. Henning & D.R. Walker, 1971). The Caslan Metis Settlement, which is in Agro-climatic subregion 3H, has between 65 and 75 frost-free days (Kjearsgaard, 1972). This short growing season would make the cultivation of wheat impractical; however, such cereal crops as oats and barley may be successfully grown because they mature earlier.

The number of frost-free days available in an area are not always determined by the area's physical location. Other factors influencing the frost-free days could be: (1) general temperature; (2) topography; (3) water bodies; (4) vegetation; (5) altitude; and (6) human habitation (Longley, 1965).

Mean Rainfall — 1951-1980

Table 4.2

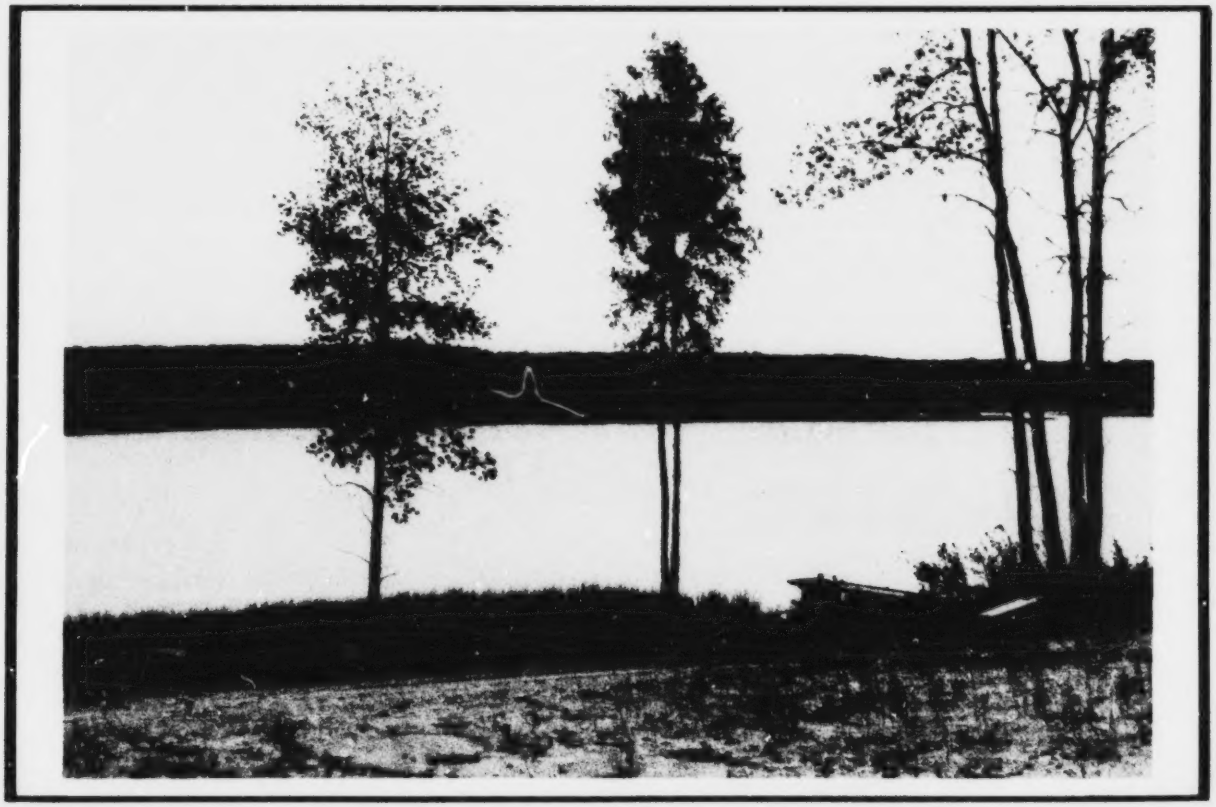
	J	F	M	A	M	J	J	A	S	O	N	D
Athabasca	-17.5	-9.7	-6.5	9.1	11.3	15.0	16.0	13.0	8.5	6.5	-1.1	-17.1
Bellis	-18.6	-11.9	-9.5	7.6	11.2	14.1	15.5	12.7	8.4	5.2	-2.6	-17.9
Lac La Biche	-17.6	-10.2	-7.5	9.4	11.8	14.8	16.5	13.5	8.6	6.9	-1.3	-17.6

NOTE: Above Figures Are Given in Millimeters (1 inch = 25.4 millimeters)

SOURCE: CANADIAN CLIMATE NORMALS 1951-1980 ENVIRONMENT CANADA.

The availability of adequate amounts of rainfall is also an important factor in crop production. Table 4.2 provides precipitation rates for 4 communities located within 65 km of the Settlement office. The annual rates for these communities vary from 352 mm (13.8 in.) to 377.4 mm (14.8 in.). Rainfall on the Settlement is expected to occur within this range.

The timing of this rainfall is an important factor in crop production. A drought during the spring would hinder growth, while excessive rainfall during late summer and fall would interfere with the harvesting.



4.2 Topography & Drainage

The topography of the Caslan Metis Settlement varies from level to strongly rolling. The lowest area is in the northeast where the elevation is 609m (2000 ft.) above sea level. The elevation rises to a level of 709m (2325 ft.) near the south border of the Settlement (see Map 4.1).

The total area for each topographic class is provided in Table 4.3 Map 4.5 indicates the location on the Settlement of each topographic class. The level to undulating topographic class (slopes less than 5%) covers approximately 8.1% of the Settlement area. This topographic class usually contains the poorly drained soils, but these soils tend to have more organic matter. If the soils are not wet and drainage can be provided, these soils may be cultivated (Pettapiece, 1984). All areas of the Settlement with this topography contain soils with Canada Land Inventory (C.L.I.) Capability Class 4 for agriculture. This is the highest C.L.I. rating on the Settlement.

The gently rolling topographic class (5 to 9%) covers approximately 43.4% of the Settlement area. This class generally forms a buffer zone separating the undulating areas from areas of rolling or rougher topography (Kjearsgaard, 1972). In the northern part of the Settlement this topographic class includes areas with a C.L.I. Class 4 Capability for agriculture. Here a road network has been developed and better drainage is possible. This may account for the relatively high C.L.I. rating given to the area.

The moderately rolling topographic class (9 to 15%) is found in two areas of the Settlement. One area is located north of Buffalo Lake and extends in an east-west direction, containing an area of approximately 5,260 ha (13,000 ac.). Within this area the low lying sections tend to be wet and poorly drained due in part to the presence of the Newbrook soil series which inhabits drainage. The other area with this topographic class is located in the south eastern part of the Settlement and contains soils that are well drained. Very little cultivation occurs on lands within this topographic class.

Topographic Classes — Table 4.3

TOPOGRAPHIC CLASS	Slope	Area	% of Total
Nearly Level to Undulating	0-5	2,831 ha (6,996ac.)	8.1
Gently Rolling	5-9	15,112 ha (37,343 ac.)	43.4
Moderately Rolling	9-15	9,106 ha (22,501ac.)	26.2
Strongly Rolling	15-30	487 ha (1,203 ac.)	1.4
Water and Fibrolic		7,268 ha. (17,960 ac.)	20.8
Total		34,804 ha (86,003 ac)	100%

NOTE: Areas were Determined with a planimeter and are approximate.

SOURCE: ALBERTA INSTITUTE of PEDOLOGY, REPORT S-72-29

The strongly rolling topographic class areas are located south of Buffalo Lake, where no agricultural activity presently occurs.

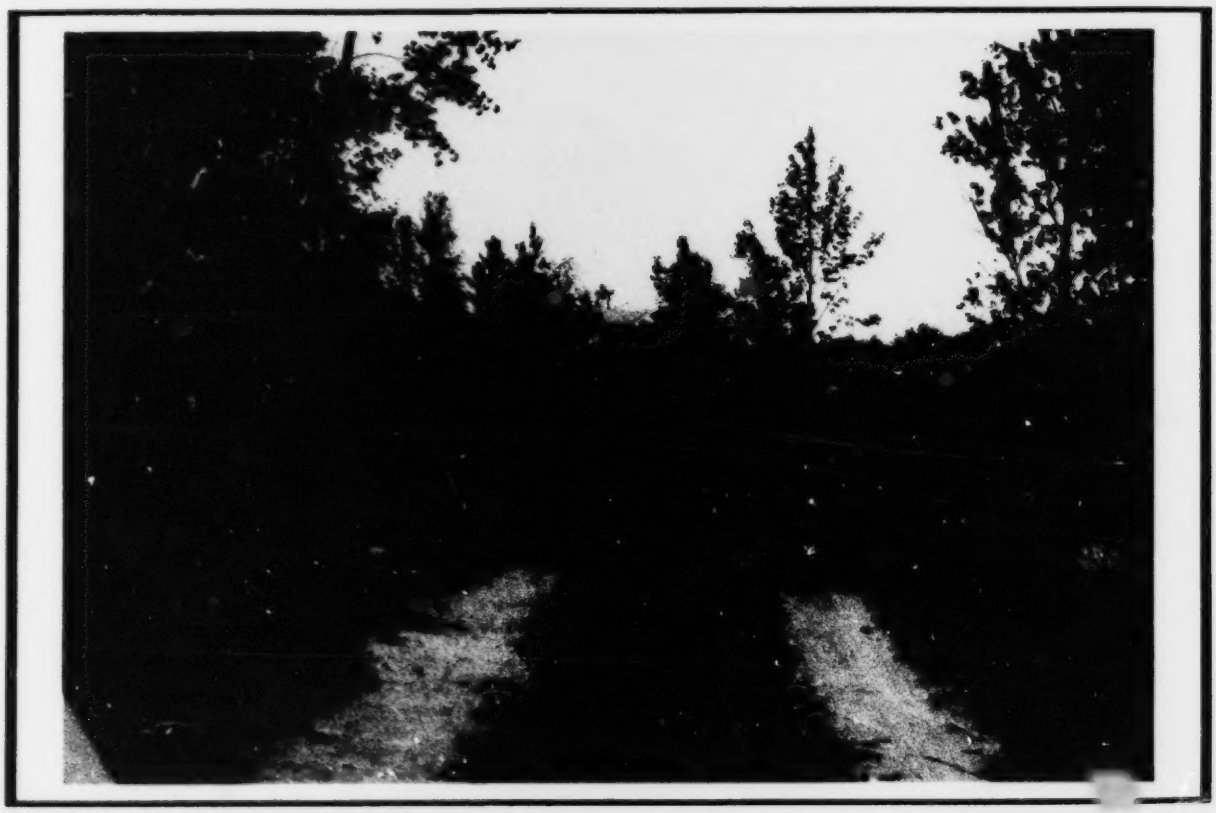
The water bodies and the Fibrisolic (muskeg) areas, which cover approximately 20.8% of the Settlement have only a limited use to the Settlement residents. The water bodies and the muskeg areas could possibly serve as a source of water for livestock. Some of the water bodies could also have some value for recreational uses.

4.3 Geology

4.3.1 Bedrock Geology

The Settlement is underlain by two bedrock formations. In the south western part of the settlement the Wapiti Formation is present. This formation is non-marine and consists of grey feldspathic clayey sandstone; grey bentantic mudstone and bentonitic and scattered coal beds (Green, 1972).

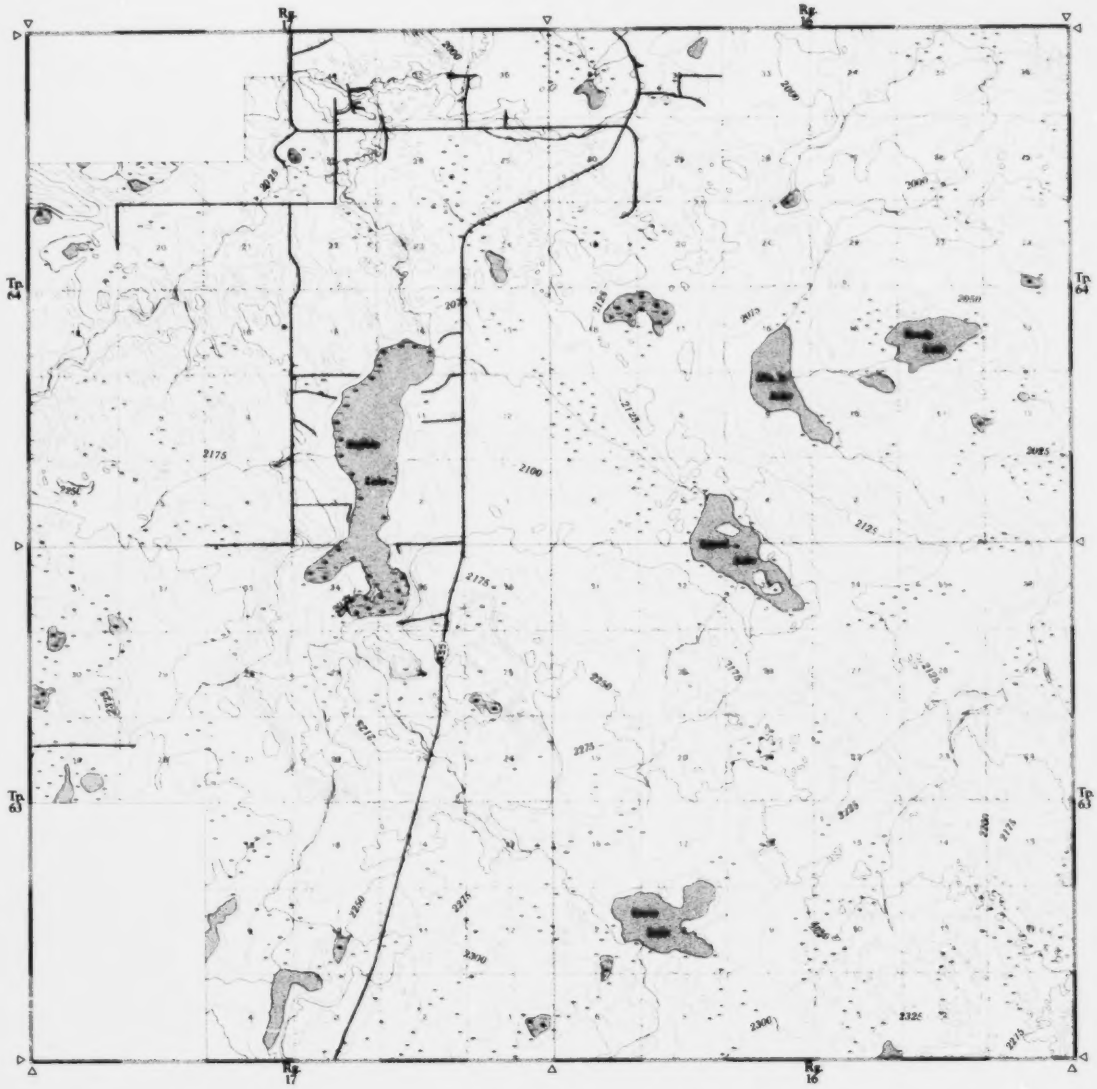
The Lea Park Formation underlies the northeastern part of the Settlement. The formation is comprised of marine dark grey shale and pale grey glauconitic silty shale with ironstone concretions (Green, 1972).



Caslan Metis Settlement

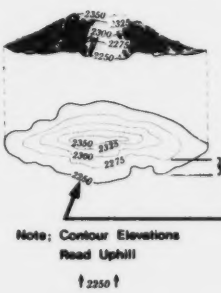
Map 4.1

Topography



Legend

Hill to Contour Relationship



Contour Interval 25ft (7.62 M)

Indicates measure above sealevel

Note; Contour Elevations Read Uphill

↑2250↑

N

W E

S

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

SOURCE:

NATIONAL TOPOGRAPHIC SERIES MAPPING

4.3.2 Petroleum and Natural Gas

The Mines and Minerals Division of Energy and Natural Resources administers the Mines and Minerals Act. This Division issues all leases required by oil companies to perform exploration and/or drilling operations on specified lands. Records of leases and of other petroleum related activities are maintained by this Division and other divisions of Energy and Natural Resources. Most of these records are available to the public.

The Caslan Metis Settlement is contained within the boundaries of two fields (F-Orders) designated by the Energy Resources Conservation Board (E.R.C.B.). They are the Caslan Field and the Figure Lake Field. The production of natural gas is the primary petroleum related activity in these two fields. Table 4.4 illustrates the status of wells on both of the fields and the Settlement, while Map 4.2 provides the locations of the gas wells on the Settlement only. The potential wells noted in Table 4.4 are those wells capable of production, but are shut in at the present time.

Estimated gas reserves data are published annually by the E.R.C.B. Publications containing this data are "Alberta's Reserves of Crude Oil, Gas, Natural Gas Liquids and Sulphur" and "Alberta's Reserves for Gas - Complete Listings". The former publication contains a condensed listing of the detailed gas reserve estimates in the latter, 3 volume publication. In these publications the reserve estimates are listed by field/area and pool.

Gas Wells — Table 4.4

	Caslan Field	Figure Lake Field	Caslan Metis Settlement
Producing	2	21	4
Potential	10	18	13
Abandoned	7	28	23

SOURCE:
ENERGY AND NATURAL RESOURCES, 1984

There are no gas reserve estimates available from E.R.C.B. for the area covered by the Caslan Metis Settlement. Anyone wishing to acquire such estimates could do so by engaging a private consulting firm with experience in this area.

4.3.3 Surficial Geology

4.3.3.1 Sand and Gravel

Sand and gravel are raw materials required for road construction and by the building industry. As these raw materials are high bulk, low cost, it is advantageous to have deposits near where they are required. At present all sand and gravel required locally must be hauled in from deposits located off the Settlement.

The locations of some sand and gravel deposits within the Settlement boundary are known, but these deposits are situated in unsettled areas with no road access (see Map 4.3). If additional sources are required in the future, the areas which contain the Edwand soils could be considered for exploration (see Map 4.5).

The availability of gravel reserves on the Settlement is important because it could reduce the costs of local construction projects. In addition, as gravel is included under surface rights, it could generate royalties for the Metis Population Betterment Trust Fund. Council should determine the quality and quantity of known deposits with a view to developing them.

4.3.3.2 Peat Moss

Commercial peat moss is used as a soil conditioner for lawns, shrubs and gardens. The peat moss industry has grown substantially in the last two decades. Total production in 1981 was 35,000 tonnes valued at 4.4 million dollars (Alberta Industry and Resources, 1982). Much of this production was exported, mainly for horticultural use.

Map 4.3 shows those areas with bog cover of 60% or greater, and depths of 0.6 m (2 ft.) or greater. The most extensive peat deposits in Caslan are located in the west half of the Settlement. Black spruce is the characteristic tree cover in moss bogs.

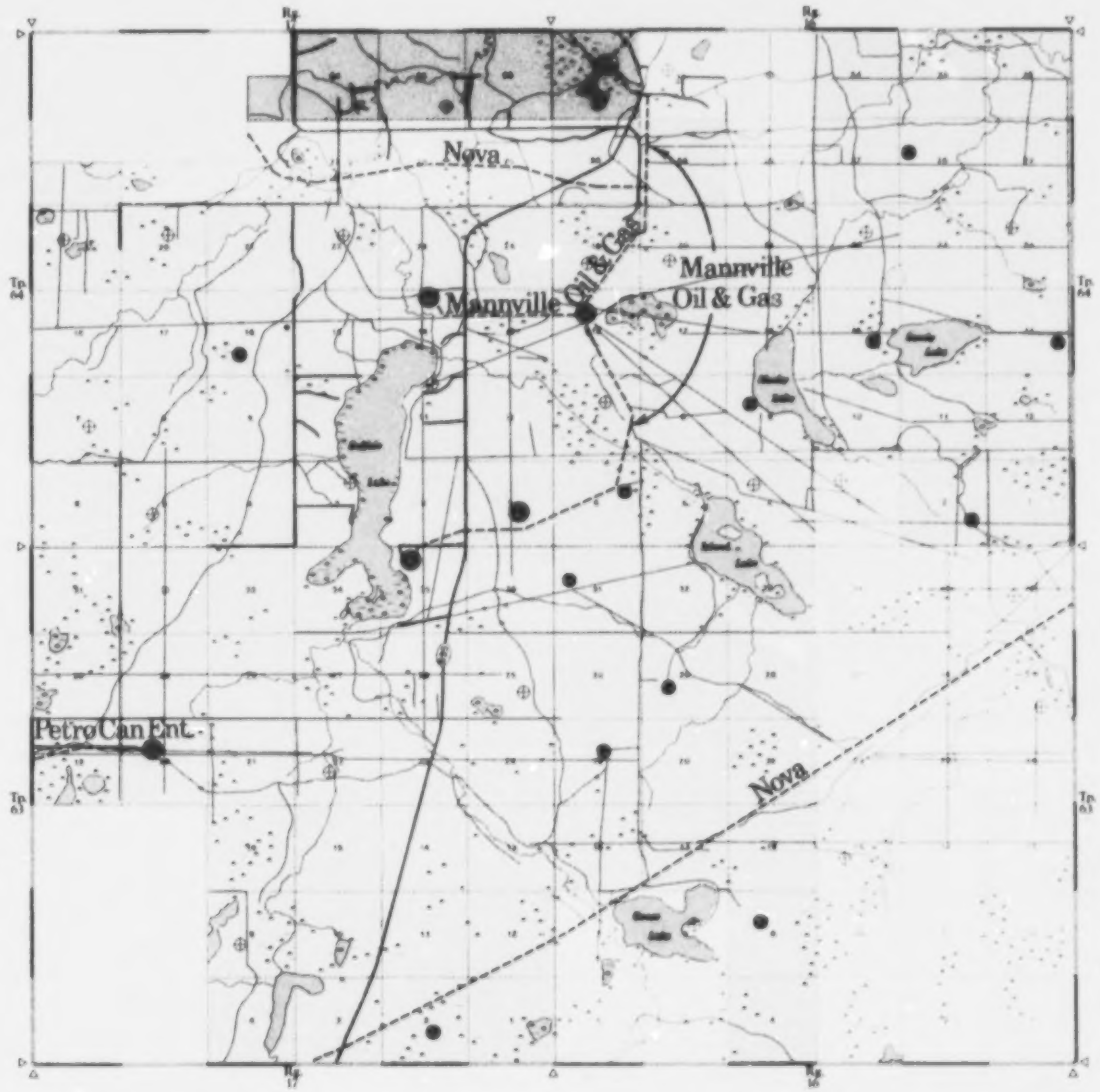
Any proposed development of these peat moss deposits would require a detailed economic feasibility study. The factors to be considered are varied and diverse. Locally the extent and the quality of the deposits would have to be assessed. Natural gas or other combustible resource is required to dry the peat moss. Access to the deposits is an important requirement. External factors such as market demand, competition, distance to market, and transportation costs would also have to be considered.

Should the results of the above suggested study prove to be positive, a commercial enterprise could be considered. Peat moss is a mineral resource that lends itself to small-scale development. An average economic operation would have an annual production capacity of 5000 tons. (Hamilton, 1975).

Caslan Metis Settlement

Map 4.2

Gas Wells & Pipelines



Legend

Pipeline	Trail or Seismic Line
Producing Well	Caslan Field
Potential Well	Figure Lake Field
Abandoned Well	

N
W E
S

Scale — 1:125,000

Km. 32 16 0 8 Km.

SOURCE:
(A) ALBERTA ENERGY AND NATURAL RESOURCES, MINERAL RESOURCES DIVISION , 1984.
(B) ALBERTA MUNICIPAL AFFAIRS ASSESSMENT SERVICES DIVISION , 1984

Caslan Metis Settlement

Map 4.3

Peat Moss & Gravel

Legend

Peat Moss 60% or greater coverage, to a depth of .61 metre (2ft.) or more

Gravel Deposits

N

W E

S

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

SOURCE:

(A) HAMILTON, W.N. GRAVEL AND PEAT MOSS DEVELOPMENT POSSIBILITIES FOR NORTHERN ALBERTANS ,1975.

(B) CASLAN METIS SETTLEMENT STAFF , 1984.

4.4 Domestic Water Resources and Supply

4.4.1 Northern Water Supply Program

In 1973 Alberta Environment initiated the Northern Water Supply Program to provide new sources of potable water for residents living on the Caslan Metis Settlement. The new wells provided under this program replaced the existing land dug and bored wells. Today most of these old wells are in poor state of repair with the wood cribbings rotting and caving in. Some of these old wells, however, are still used for drinking by the residents because their water has a lower iron content than water from the new wells (Tokarsky, 1983).

Between 1973 and 1978, 43 wells were drilled, 25 bored wells were completed, and 30 dry holes were encountered. The depths of the successful wells ranged from 9.4 m (34 ft.) to 51 m. (156 ft.) with an average depth of 27 m (88 ft). The water bearing zones were located at an average depth 26 m (85 ft) below ground level. The well yields ranged from 0.68 l/m (litres per minute) or 0.15 igpm (imperial gallons per minute) to 55 l/m (110 igpm) (Alberta Environment, 1978). Map 4.4 shows all the water well locations.

A submersible pump was installed on each completed drilled and bored well. The new wells and pumps help make water more accessible for storage and treatment. They also provide for the possibility of installation of indoor plumbing in homes and the provision of automatic water systems for livestock outdoors.

4.4.2 The 1982 Program

In July of 1982 Kamac Consultants Ltd. was retained by Alberta Municipal Affairs to provide professional services in the areas of groundwater exploration and aquifer evaluation. This study included the drilling of a 109.4 m (360 ft) test hole and the evaluation of an aquifer on the NW 27-64-17-W4. The results of this study were published in a report completed in September of 1982.

Kamac Consultants was also retained in 1982 to co-ordinate and supervise a well drilling/boring and a well rejuvenation program. This program was carried out between March and May of 1983, and resulted in the completion of 11 drilled and 2 bored wells. Also 4 dry holes were encountered and repairs were carried out on 7 problem wells.

The 11 rotary-drilled wells were located in the northern part of the Settlement. Their depths ranged from 19.2 m. (63 ft.) to 55.5 m. (168 ft.) and their yields varied from 2.5 l/m (0.56 igpm) to 472.1 l/m (104 igpm). These wells were completed with plastic casings instead of steel to minimize or eliminate iron incrustations. A one-half horsepower submersible pump was installed on all successful wells.

The two bored wells completed on the east side of Buffalo Lake had depths of 20.7 m (68 ft) and 31.6 m (104 ft). Their yields were 7.3 l/m (1.6 igpm) and 9.5 l/m (2.1 igpm). A submersible pump was also provided to the two bored wells.

The 4 dry holes encountered were on the west and northwest side of Buffalo Lake. Drilling depths of these unsuccessful wells ranged from 42.4 m (139 ft) to 60.4 m (198 ft).

Seven of the existing wells on the Settlement were poor producers or required some repair work. Remedial work consisted of simple repairs, well cleanouts, well acidizing, pump replacement, and some major electrical work.

The provision of 13 additional wells provided by this program increased the well total on the Settlement to over 100. (Tokarsky, 1983). This figure included the 16 wells that are found on vacated residential sites, and those wells that could or should be abandoned. Of the remaining 84 wells, there are some that require minor repair work to make them operational and some contain water of poor quality for drinking. Some of these wells also produce water in very low quantities and may require repair or replacement with new wells. As there are also new residential sites being created which will require new wells, it is expected that requirements for new wells and/or well repair will have to be continually monitored to ensure that available funds for this purpose will be used to best advantage.

4.4.3 The 1983 Program

In August 1983, Geoscience Consulting Ltd. was retained by Alberta Municipal Affairs to inventory water wells on the Caslan Metis Settlement and to identify wells that needed rejuvenation or abandonment. The required inventory was completed in Nov. 1983. Geoscience Consulting Ltd. was also retained to supervise the drilling of new wells and the rejuvenation of old wells. With this program 18 drilled wells were completed, 5 dry holes were encountered, and remedial work was carried out on 19 existing wells. Some of the new wells were drilled in sandstone[1] or sandy shales[2], while the remaining 13 wells were completed within sand and gravel lenses in drift[3]. (Tokarsky, 1984).

The depths of the 18 successful wells ranged from 12.5 m (41 ft) to 76.9 m (253 ft). Three of these wells were located on the west side of Buffalo Lake, an area which had been considered a problem area for finding ground water. The depths of these three wells ranged from 72.5 m (238 ft) to 77.1 m (253 ft). The depths noted are considerably deeper than were previously drilled in this area. The yields for these three wells ranged from 2.25 l/m (0.5 igpm) to 166.5 l/m (37.0 igpm). The yield of 18 wells drilled under this program ranged from 1.8 l/m (0.4 igpm) to 202.5 l/m (45.0 igpm).

A total of 5 dry holes were drilled during this period - two of which were on one site (NE 28-64-17-W4). The depths of these two wells were 79.3 m (261 ft) and 109.4 m (360 ft), while the depths of the three remaining wells ranged from 30.4 m. (100 ft to 71.2 m (234 ft). Deeper drilling of the well with 30.4 meter depth may have resulted in the discovery of groundwater, but the resident did not wish to drill further because of the presence of mineralized water normally found at greater depths.

Remedial work was carried out on 19 existing wells. Well repairs consisted of simple repairs, well cleanouts, well acidizing, pump replacement, and some electrical work.

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[1]sandstone - a rock made up of sand that usually consists of quartz more or less united by some cement (as silica, iron oxide or calcium carbonate).
[2]shale - a fissle (capable of being divided in direction of grain) rock that is formed by the consolidation of clay, mud or silt, has a finely laminated structure parallel to the bedding.
[3]drift - any rock material such a boulders, till, gravel, sand or clay transported by a glacier and deposited by or from the ice in water derived from the meeting of the ice.

While virtually no drilling has occurred in the area shaded on Map 4.4., the chances of finding a suitable aquifer here should be good considering the fact that only 2 residents were left without ground water after the completion of the most recent drilling program. To find adequate quantities of groundwater may, in some cases, require deeper drilling than has been undertaken by previous drilling programs. Unless a suitable aquifer is obtained sooner, drilling should not be terminated until bedrock has been reached and evaluated for its water possibilities. (Tokarsky, 1984).

Alberta Environment standards suggest that water requirements be 1091 litres/day/lot (240 imperial gallons/day/lot) for a household of 4 people. This requirement includes the amount of water required for human consumption and sanitary purposes, but does not provide water for fire protection, irrigation, livestock or other purposes. (Alberta Environment, 1983). A well capable of maintaining an output of 2.25 l/m (0.5 igpm) will produce 3268 litres (720 imperial gallons) in 24 hours. This quantity of water will be sufficient for daily household requirements, but the well output may not be sufficient for peak period use. A storage or reservoir system, such as a bored well or a cistern, may provide the required larger quantities of water needed during periods of greater demand.

4.4.4 Water Chemistry

Chemical analyses are available for water in most of the wells that have been drilled on the Settlement. These analyses confirm that water in almost all the wells on the settlement is very hard. Iron, which is the main problem, exceeds 1.5 mg/l (milligrams per litre) in 53 wells, and is below the recommended 0.3 mg/l in only 15 wells that were analyzed. (Tokarsky, 1983). A high iron content imports a metallic taste to water. Iron is also objectionable in water because it stains clothing and plumbing fixtures. (Johnston, 1976).

High mineralization is another water-related problem. This degree of mineralization is designated by the T.D.S. (total dissolved solids), which is the total of all chemical impurities dissolved in water. On the Settlement, 2 wells have a T.D.S. of over 2000 mg/l, 10 wells have a T.D.S. of between 1500 and 2000 mg/l, and 24 wells show a T.D.S. content of 1000 to 1500 mg/l. (Tokarsky, 1983). A T.D.S. content over 1000 mg/l is considered high, but not necessarily hazardous to health (Johnston, 1976).

In 34 out of 55 wells the sulfate concentrations were in excess of 250 mg/l. Sulfate concentrations of 500 mg/l are considered acceptable for drinking weather (Canadian Drinking Water Standards and Objectives, 1968). Sulfates in excess of 250 mg/l may have a carthartic (laxative) effect on persons, although in time the body builds up a resistance to sulphates (Johnston, 1976).

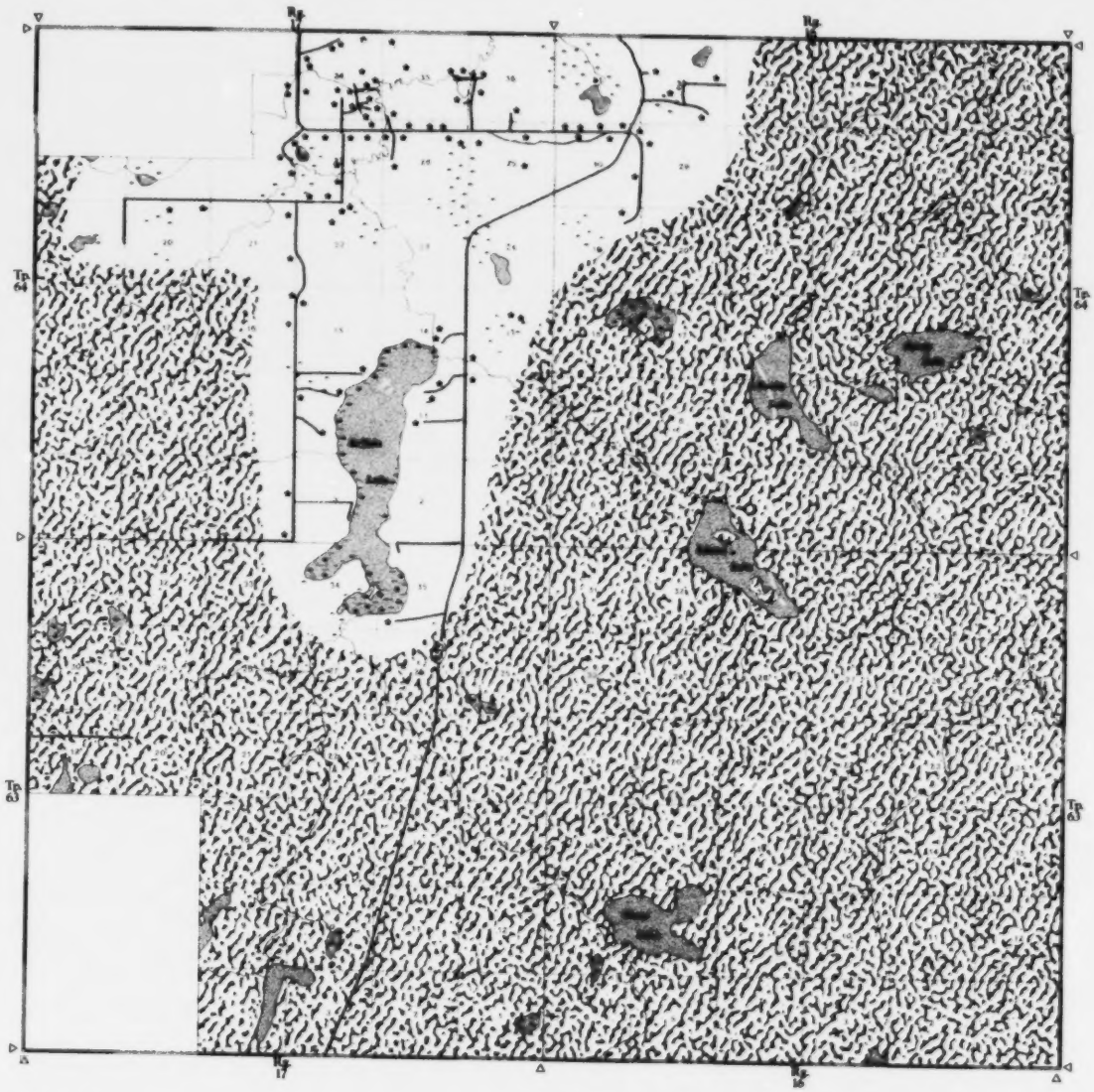
Since the first drilling program (Northern Water Supply Program) the wells have been continually drilled deeper. In the 1983 Program, 7 out of 18 wells were drilled to depths greater than 60.8 m (200 ft). While the mineralized water has generally been found at the greater depths, there does not appear to be a consistent relationship between well depth and water quality. For example, one of the two wells located in SW 13-64-17-W4 was drilled to a depth of 31.6 m (104 ft) in early 1983. This well was tested in October 1983 and found to have a T.D.S. exceeding 2000 mg/l and a sulphate content slightly under 800 mg/l. Only one deep well (more than 60.8 m deep) drilled in 1984 has a sulphate content that is slightly exceeds 800 mg/l, but none of these deep wells has a T.D.S. content close to 2000 mg/l.

At the present time there is no reason to believe that a more acceptable quality of groundwater will be found when new areas of the settlement are developed. To help make the water more acceptable, all the latest technology for raw water treatment should be investigated. The local Health Unit should be requested to check those locations where health problems that could be water-related have been reported. (Tokarsky, 1983).

Caslan Metis Settlement

Map 4.4

Rural Water Sources



Legend

- Well Site
- Groundwater Probability Unknown

SOURCE:
GEOSCIENCE CONSULTING LTD.
WATER WELL DRILLING AND REFURBISHING, 1984

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

4.5 Agriculture

4.5.1 Soil Capability For Agriculture

The potential for agriculture on the Caslan Metis Settlement is related to factors of production both physical and socio-economic. The socio-economic factors are dealt with in Section 4.5.2. The physical considerations included in this report are climate, topography, and soils. As climate and topography have been discussed earlier, this section will be limited to the discussion of the soil conditions present on the Settlement.

The Canada Land Inventory (C.L.I.) classification system has been used for reports of this nature to evaluate agricultural soils. This classification system is a "measure of the land's ability to produce crops common to the area based on the soil's physical and environmental characteristics" (Kjearsgaard, 1972). Two limitations to agricultural production on the Caslan Metis Settlement are evident upon referring to the available C.L.I. Capability Maps. They are topography and soil conditions. The limitations due to topography are outlined in section 4.2.

The soil limitations given for the Tawatinaw Mapping region include the following: undesirable structure, low permeability, restricting root zone because of soil characteristics, low natural fertility, low moisture holding capacity, and salinity.

As the Tawatinaw Mapping region covers an area of 1,428,167 ha. (3,529,000 ac.), some generalization of the soil limitations was required. Some of the soil limitations provided earlier are applicable to conditions found on the Settlement, and some are not. Other factors such as organic matter content, drainage, soil erosion, and stoniness should be considered when evaluating the area's suitability for agriculture. From a settler's point of view, all the limitations should be site specific on the settlement. What is required here is a level of detail the C.L.I. data were not intended to provide, and other data sources are required. The system to be used here to classify the soils is based on an established system for soil classification with various subgroups, great groups, and orders. This classification system is based on major differences in soil make up such as texture, structure, consistence, color, and other physical, mineralogical, and biological features exhibited by the soil profiles. The basic unit of this classification system is the soil series. Table 4.5 indicates the soil classification hierarchy for lands within the Caslan Metis Settlement.

Classification of Soil

Table 4.5

Order	Great Group	Sub Group	Series or Complex	Map Symbol
Brunisolic	EutricBrunisol	Degraded Eutric Brunisol	Codesa Edwand	Co Ed
Gleysolic	Eluviated Gleysol	Low Humic Eluviated Gleysol	Newbrook	Nb
Luvisolic	Gray Luvisol	Orthic Gray Luvisol	Athabasca Tawatinaw	Ah Tn
Organic	Fibrisol	-	-	F

SOURCE:
ALBERTA INSTITUTE OF PEDOLOGY, REPORT S-72-29.

In this section only the soil series will be discussed in some detail. The soil series is a "soil body such that any profile within the body either has a similar number and arrangement of horizons whose color, texture, structure, consistency, thickness, reaction, and composition of these, are within a defined range or, in soils without horizons, any profile which has the differentiating properties, except thickness, within specified depth limits". (A.G. Twardy and I.G.W. Coins, 1980). Table 4.6 lists some of the characteristics and management practices of those soil series found on the Settlement. Map 4.5 indicates the location and quantity of each of the soil series. For example, Ah5 Tn4 F1 indicates that a specified area contains 50% Athabasca, 40% Tawatinaw, and 10% Fibrisolic soils.

Additional data on the characteristics of these soils will be provided further in this report. All these data will enable a user to better understand the agricultural capabilities and limitations of the soils on the Settlement. It should be noted that Table 4.6 provides some physical characteristics for both the top soil and the subsoil. The top soil is generally that soil above plow depth, while the subsoil is that soil below plow depth.

4.5.1.1 Athabasca Service

Athabasca soils are classified as Orthic Gray Luvisols (Gray wooded) and are the dominant soils on the Settlement. The associated soils are the Codesa, Edwand, Fibrisol, Newbrook, and the Tawatinaw.

The organic matter content of the Athabasca series is generally low. This factor frequently requires tillage and harvesting to be delayed until soil is of a sufficiently low moisture content. Attempting tillage or harvesting operation during wet conditions would result in the equipment becoming stuck in the soil. (E.F. Bently, T.W. Peters, A.M.F. Henning, and D.R. Walker, 1971).

As the Athabasca soil has a clay loam subsoil, the permeability (downward movement of water through soil) is rated as medium. The water storage capacity is also medium, while the drainage is rated as moderate. In Gray Wooded areas with a subsoil that is enriched with clay, the moisture may have difficulty seeping down when the soil is wet. Soils with this condition would be encumbered with poor permeability and poor drainage (C.F. Bently, T.W. Peters, A.M.F. Henning, and D.R. Walker, 1971).

Saline soils contain soluble salts in such quantities that they interfere with the growth of some crops. Soil salinity does not appear to be a problem on the Caslan Metis Settlement.

Athabasca soils, because of their low organic content and powdery nature, have a hard surface when they are dried out. This condition requires a good deal of power to prepare a seed bed. Showers after seeding may puddle the soil surface, and subsequent drying may hinder seed emergence. (Kjearsgaard, 1972). Stones are found throughout the soil profile in varying sizes and concentrations.

In their natural state, Athabasca soils are deficient in plant nutrients, particularly nitrogen. In addition, as Athabasca soils are generally low in lime content, the pH values may be low. The pH value is used to express the acidity or alkalinity of the soil. A pH of 7 means that the soil is exactly neutral while a lower pH means the soil is acidic, and a higher pH shows that the soil is alkaline. A soil with a pH between 6 and 8 is ideal for most crops. Crops such as oats, flax, and grasses (timothy, creeping red fescue, and broom grass) are tolerant to some soil acidity. Crops such as canola, wheat, barley, and legumes (red clover, alsike clover, birdsfoot trefoil, and alfalfa) are sensitive to soil acidity. Alfalfa is the most sensitive of the legumes. Certain varieties of barley are less susceptible to soil acidity and their use should be investigated. It is possible to correct soil acidity with lime, but this is often a costly process

(C.F. Bently, T.W. Peters, A.M.F. Henning, and D.R. Walker, 1971). Such matters as type of crops, crop rotations, and fertilizer to be used should be discussed with a District Agriculturist before any planting takes place.

Vegetative cover on Athabasca soils is primarily aspen poplar with some white spruce. Some balsam poplar and birch are found on moist northern slopes of the hills (Kjearsgaard, 1972).

Athabasca soils are found on topography that ranges from the relatively smooth (0-5% slope) to strongly rolling (15-30%) slope). The majority of the cultivated soil is located where slopes are less than 9%.

Athabasca soil has been placed in a Capability Class 3 soil. However, external limiting factors, particularly climate, has placed this soil in a Capability Class 4 or 5 for agriculture. (Kjearsgaard, 1972).

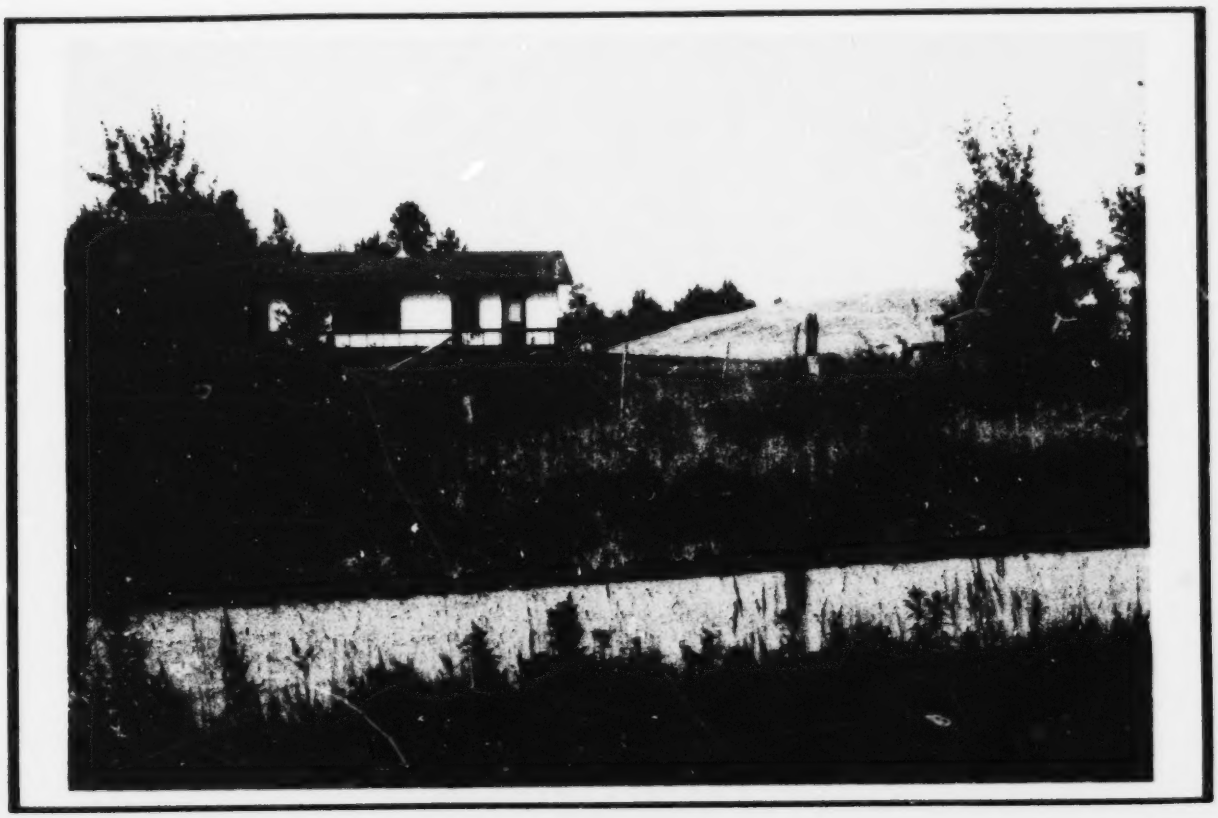


Table 4.6
Characteristics and Management Aspects of Soils

Soil Series	Topsoil: Thickness (inches)	Topsoil: Organic matter content	Topsoil: Permeability	Subsoil: Permeability	Subsoil: Salinity	Subsoil: Water storage	Drainage	Surface Pattern	Erodable by	Stoniness	Tillage Practice	Fertilizer required
Athabasca	6	Low	Med.	Med.	Free	Med.	Mod.	T3-4	-	S2	S.P.	N,P,S,
Codesa Complex	5	Low	High	Med.	Free	Low	Well	T3	Wind	S0	S.C.	N,P,
Edwand	3	Low	High	High	Free	Low	Rapid	T2	Wind	S3	S.C.	N,P,
Fibrisol	-	High	High	High	Free	High	V.P.	T5	-	S0	-	N,P,K,
Newbrook	6	Low	Med.	Med.	Free	Med.	Poor	T5	-	S1	S.C.	N,P,K,
Tawatinaw	6	Low	High	Med.	Free	Med.	Well	T4	-	S2	S.P.	N,P,

Organic matter content—Low—less than 3.5% organic matter
Med. (medium)—between 3.5 and 7% organic matte
High—more than 7% organic matter

Permeability—the movement of water through the soil
Low—less than 0.2 inches/hr.
Med. (medium)—between 0.2 and 2.0 inches/hr.
High—more than 2.0 inches/hr.

Salinity—the quantity of soluble salts
Free—less than 0.15% soluble salts (less than 4 mmhos/cm)
Weak. (weakly)—from 0.15 to 0.35% soluble salts (4 to 8 mmhos/cm)
Mod. (moderately)—from 0.35 to 0.65% soluble salts (8 to 15 mmhos/cm)
St. (strongly)—greater than 0.65% soluble salts (greater than 15 mmhos/cm)

Water storage—total water held by the soil at field capacity*
Low—less than 2 inches water/ft. soil
Med. (medium)—between 2 and 5 inches water/ft. soil
High—more than 5 inches water/ft. soil

*Field Capacity—the percentage of water remaining in a soil 2 or 3 days after having been saturated and after free drainage has practically ceased

Drainage—
Rap. (rapidly)—the soil moisture content seldom exceeds field capacity in any horizon except immediately after water additions
Well—the soil moisture content does not normally exceed field capacity in any horizon for a significant part of the year
Mod. (moderately well)—the soil moisture in excess of field capacity remains for a small but significant part of the year
Imp. (imperfectly)—the soil moisture in excess of field capacity remains in subsurface horizons for moderately long periods during the year
Poor (poorly)—the soil moisture in excess of field capacity remains in all horizons for a large part of the year
V.P. (very poorly)—free water remains at or within 12 inches of the surface most of the year

Surface pattern—
T1—relatively level, very little nonarable land, uniformly shaped fields
T2—relatively level, contains depressional areas, some field irregularity
T3—gently rolling and rolling with both uniform and complex slopes, occasional nonarable spots, some field irregularity
T4—rough, often hummocky with complex slopes, contains nonarable depressional spots, irregular fields
T5—depressional, poorly drained areas

Stoniness—
S0—relatively no stones
S1—few stones, relatively no obstruction to cultivation
S2—sufficient stones to offer some obstruction to cultivation
S3—excessively stony

Tillage practice—
O—ordinary recommended cultural practices
S.P. (special precautions)—some tillage precautions necessary such as use of specialized implements, or cultivation at critical moisture content
S.C. (special care)—special care needed in all management practices on soils vulnerable to erosion, or where hard layers occur near the surface; or on soils with granular structure that is easily destroyed

Fertilizer required—
N—Nitrogen
P—Phosphorous
K—Potassium
S—Sulphur

SOURCE: ALBERTA INSTITUTE OF PEDOLOGY report# S-72-29

4.5.1.2 Codesa Complex

Codesa soil exists on the Settlement as a minor inclusion with the Athabasca series. This complex consists of weakly developed Orthic Gray Luvisol and Degraded Ecitric Brunisol subgroups.

Codesa soils are low in organic content. The sandy nature of this series accounts for the relatively high permeability and the low water storage capacity. These soils are generally well drained. Topography ranges from level to gently undulating (0–5% slope). Tree cover consists mainly of aspen with some stands of balsam poplar and birch.

The low inherent fertility and the sandy nature of the codesa soil makes it unsuitable for continuous cultivation. Any continuous cultivation of this soil would be uneconomical, and would encourage soil erosion. A limited amount of this soil, with the Athabasca series as main constituent, is being cultivated on the west side of Buffalo Lake. The soil has a Capability Class 4 for agriculture.

4.5.1.3 Edwand Series

Edwand soils are found with soils of the Athabasca and Fibrisolic series in the south eastern part of the Settlement. The Edwand series is classified as Degraded Eutric Brunisol.

Edwand soils are low in organic content. As the soil developed on sand or gravelly material, the soil's permeability is high, its water storage capacity is low, and the drainage is rapid. This rapid drainage limits vegetative cover to jack pine and some scrub aspen poplar. Topography ranges from gently rolling (0–5% slope) to moderately undulating (9–15% slope), with the majority being gently rolling. This soil is subject to erosion.

Cultivation of this soil with mechanized equipment is not feasible, though it may be suitable for some grazing. At present, this soil does not appear to be used for either cultivation or pasture. Edwand soil could have some value as a potential source of gravel for construction purposes. The soil is rated as Capability Class 6 for agriculture.

4.5.1.4 Fibrisol Series

The organic soil (muskeg) is found in association with Athabasca, Codesa, Edwand, Newbrook, and Tawatinaw series on the Caslan Metis Settlement.

This soil has high organic content, high permeability, high water storage capacity, and very poor drainage. The soil is always found in level or depression areas of varying size and shape. Tree cover is mainly black spruce and tamarack.

Fibrisols generally have no value for cultivated agriculture or grazing. It may, however, serve as a potential water supply for stock grazing in adjacent pastures. The soil may also serve as a source of peat for a peat industry if the pH is sufficiently low.

4.5.1.5 Newbrook Series

The Newbrook soils are found in association with Athabasca and Fibrisol soils. The soil is classified as Low Humic Eluviated Gleysol.

The soil has a low organic content, and a medium permeability and water holding capacity. Due to the clay loam and silt loan subsoil the drainage is poor. The soil is found in level to gently rolling topography (0–5% slope). The vegetative cover is generally limited to willows.

Due to the poor drainage conditions, normal cropping practices cannot be followed where the newbrook soil is the primary constituent. The soil, because of its lower position in the local landscape, may be susceptible to early frosts. As the soil is a minor constituent with Athabasca, the Settlement residents have cultivated this soil for coarse grain and forage crop production. For the purposes of agriculture, this soil is classed as a Capability Class 4.

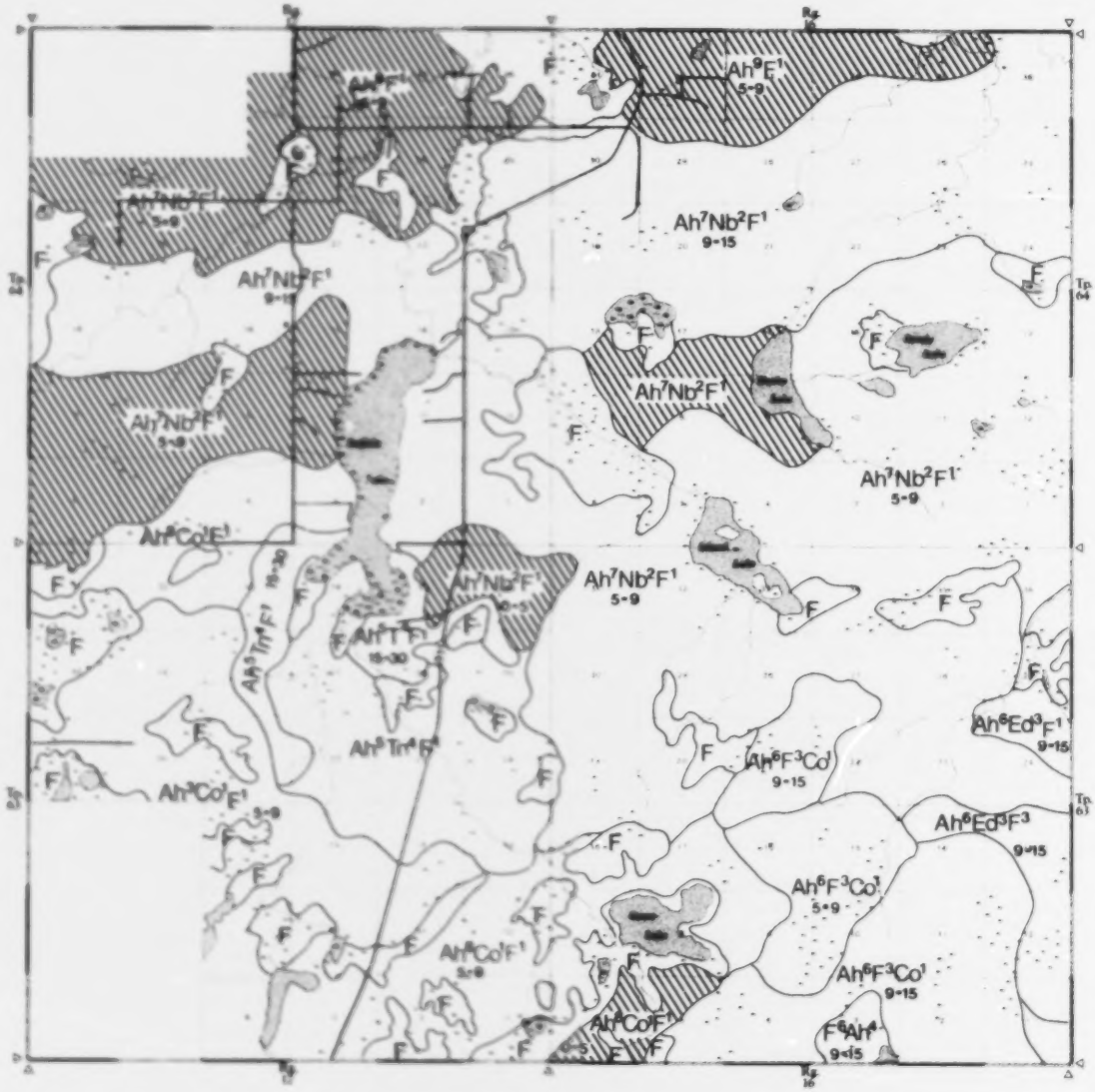
4.5.1.6 Tawatinaw Series

The Tawatinaw soils are found in association with Athabasca and Fibrisol series. The classification of this soil is Orthic Gray Luvisol.

The soil has a low organic content. The top soil permeability is high due to presence of sandy loam or loamy sand texture, while the subsoil permeability is medium. Soil is well drained and has a water holding capacity rating as medium. Topography varies from gently rolling (0–5% slope) to strongly rolling (15–30% slope). Tree cover is primarily aspen poplar with some spruce and birch.

Tawatinaw soils are suitable for improved pasture or forage crops if nitrogen and phosphorous fertilizer could be applied on a continuous basis (Kjearsgaard, 1972). There does not appear to be any soil which has the Tawatinaw series as a constituent being cultivated on the Caslan Metis Settlement at the present time. For the purposes of Agriculture, the Tawatinaw soil has been classed as Capability Class 4 to 5.

Soil Capability for Agriculture



Legend

Ah[9] 5-9 — Slope of Land in Percent
Proportion of Soil Type in Area (in tenths)
Soil Type

Class 4 Type Soil

N W E S

SOURCE:
ALBERTA INSTITUTE OF PEDOLOGY. REPORT #S-72-29.

Scale — 1:125,000
Km. 3.2 1.6 0 .8 Km.

4.5.2 Agricultural Development

In previous sections of this report we examined such agriculturally related factors as low soil fertility, topography, and adverse climatic conditions; all factors that tend to influence the type of farming operations that can exist on the Settlement. The following subsection will address the present agricultural development, and some of the general socio-economic factors which effect farming on marginal agricultural land.

Some of the general socio-economic factors relating to agriculture and marginal lands include (Beattie, Bond, Manning, 1981):

1) land (farm size, fragmentation, distance to market, transportation infrastructure);
2) labour (age, lifestyle, education and farmskills, economic expectations);
3) capital and infrastructure (capital accumulation, credit, investment returns); and
4) management (management skills, managerial counselling, competitive advantages, maximization of resource).

Many of the above factors affect existing and potential agricultural development on the Settlement. The extent to which these factors influence operations on the Settlement is related here after discussions with the District Agriculturist, the Metis agricultural consultant, the Settlement Council, and residents of the Settlement.

Caslan has been slowly developing its agricultural base. About 30 families have some interest in farming, with a lesser number actively involved in this occupation. Agricultural activity is characterized by cow-calf operations. Map 4.6 shows the locations of the allocated land and Map 4.7 illustrates those areas that are farmed at the present time.

A 1984 Municipal Affairs survey shows that there are approximately 166 ha. (410 ac.) of cultivated land on the Settlement. There are also approximately 101 ha. (250 ac.) tame hay, 130 ha. (321 ac.) improved pasture, and 140 ha. (348 ac.) of brushed land (See Table 4.7).

The figures noted could change over time due to crop rotational patterns. Crop rotation is necessary because of the poor soil conditions on the Settlement. The common practice is to plant an oat and hay mixture for the first crop. This allows a settler to cut a green feed crop the first year, and a hay crop the second year. The field remains in hay for up to 5 or 6 years. After this period the hay crop yield drops to a point where further cutting of the crop is no longer economical, and the field is ploughed to begin the rotation over again (Scott, 1983).

The cultivated land occurs on both the better and the poorer soils on the Settlement. There are still some better soils (C.L.I. Class 4) that could be cultivated. This is evident by comparing the Soils Map 4.5 with Map 4.7.

The grains/summerfallow/broken class in Table 4.7 involves land that is producing, or is ready for the production of feed grain. The crop most commonly grown is oats. Virtually all the feed grain is cut as green feed for livestock.

There are approximately 140 ha. (348 ac.) of land cleared and ready to be broken on the Settlement. Size of these fields varies from 2 ha. (5 ac.) to 20 ha. (50 ac.). These fields are on both the poorer and better soils. The Settlement has the necessary equipment suitable for clearing this land. This equipment is available for the settler's use at a rate lower than for similar work done elsewhere.

The tame hay fields produce the winter feed required by livestock. Crops produced on these fields are perennial forages such as broom grass, fescue, timothy, and clover. The average size of the tame hay fields is about 12.1 ha. (30 ac.). Yields on these fields vary from one ton to two tons per acre (Scott, 1983).

Farmland and Pasture

Table 4.7

FIELD TYPE	Area	% of Total
Grains/Summerfallow/Broken	166ha. (410ac.)	30.8
Tame Hay	101ha. (250ac.)	18.8
Improved Pasture	130ha. (321ac.)	24.1
Brushed	140ha. (348ac.)	26.2
Total	537ha. (1329ac.)	100%

SOURCE : ALBERTA MUNICIPAL AFFAIRS SURVEY, 1984

The improved pasture category fields are those fields that have been seeded down in grass and then allowed to regenerate to their natural state. On the Settlement these fields cover an area of approximately 130 ha. (321 ac.). Sometimes the tame hay fields and the improved pasture fields appeared similar so judgement calls were made.

The use of fire to maintain grasslands should be considered. This technique is an effective and inexpensive way to keep bush from regenerating; however, the technique should be used early in the spring to prevent damage to soil and to reduce the possibility of causing uncontrollable fires (Scott, 1983).

Another source of winter feed for livestock is slough hay cut in low-lying areas throughout the Settlement. As these areas are subject to flooding, the yield from this source varies from year to year. Drought conditions could also adversely affect the yield of this feed source.

The community pasture, which is leased by the Sandy Lake Cattlemen's Association, covers an area of approximately 6,900 ha. (17,000 ac.) and is fully fenced. The extent of this pasture is indicated on Map 4.6. There are several lakes within the pasture to provide water for the livestock. Only cattle owned by the residents of the Caslan Metis Settlement are permitted in the community pasture. Grazing privileges were once extended to ranchers living off the Settlement, but this practice proved to be unsatisfactory and has been discontinued.

The raising of livestock is the mainstay of the local agricultural economy; however, this economy has been in a state of decline for some time now. Figures available from the Metis Development Branch indicate that there were 355 head of livestock on the Settlement in 1976. This number has now declined to less than 200 (Settlement Council, 1984). There are a number of reasons for this decline. The returns realized from the sale of livestock are low and there appears to be little reason to believe that they will improve. Provision of adequate amounts of feed for wintering the livestock is another important consideration. If feed supplies are not adequate on the Settlement, the additional quantities required would have to be purchased off-Settlement. As the feed supplies would be subject to supply and demand, low feed supplies would cause prices to rise. The combination of low returns and the potential for high feed costs have caused most settlers to reduce their livestock inventories substantially.

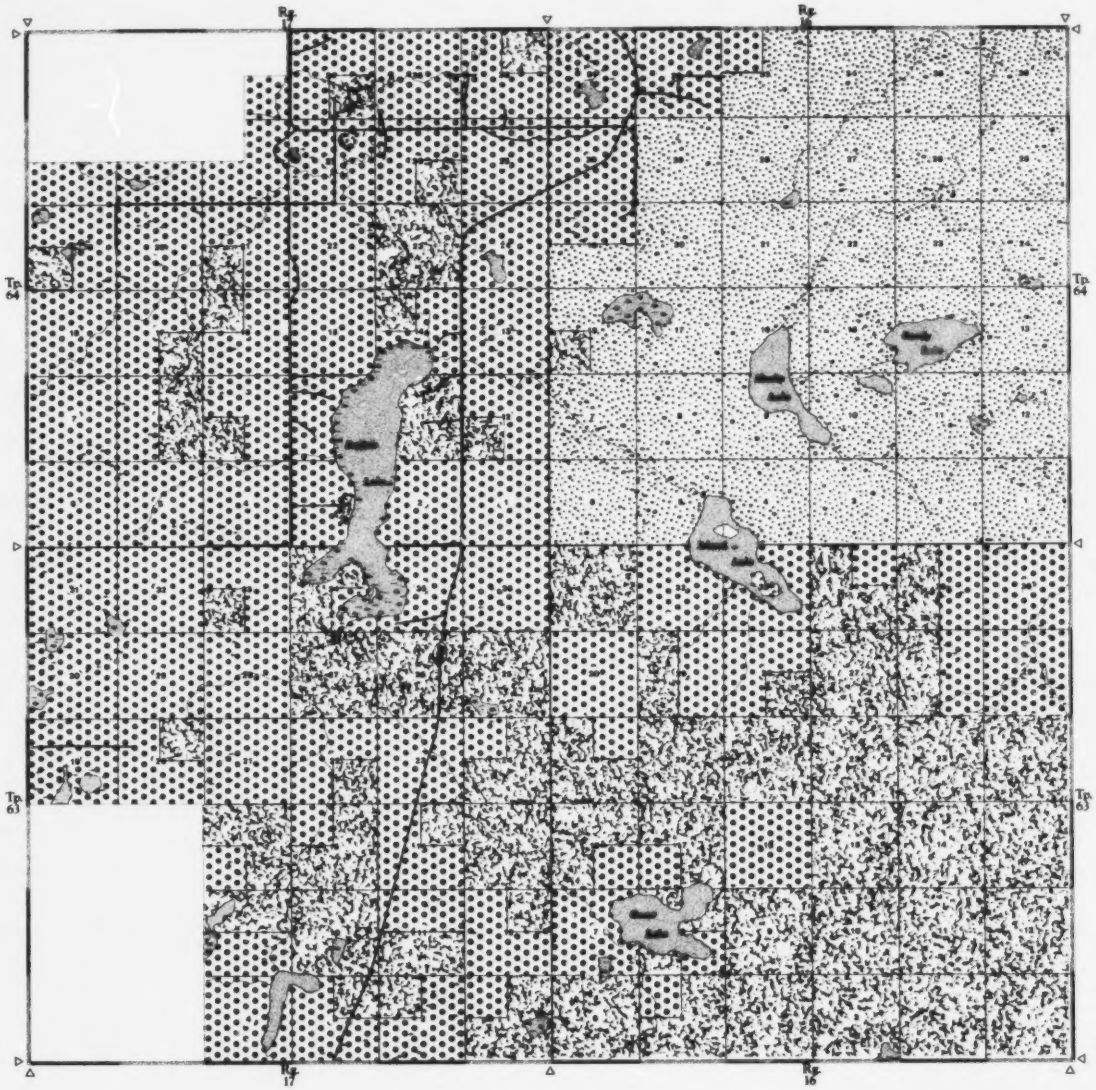
The land-related factors all have an influence on farming practices on the Caslan Metis Settlement. The fields on the Settlement are frequently small and irregularly shaped. Few fields are larger than 40.4 ha. (100 ac.) in size. The settlers should be encouraged, where possible, to create larger cultivated parcels. This is particularly important in areas where Class 4 Capability soil exists (See Map 4.5). Class 4 soil is the best soil on the Settlement, so the use of this resource should be maximized.

The labour-related factors cannot be ignored. Most of the settlers actively involved in farming are older, but there appears to be some interest in farming by the younger residents. (Settlement Council, 1984). Most of the settlers that are engaged in agriculture have experience in cow-calf operations, but few have a formal agricultural training.

Caslan Metis Settlement

Map 4.6

Land Allocation



Legend

- Allocated Land
- Unallocated Land
- Community Pasture (Sandy Lake Cattlemans Association)
- Recreation Area

N
W
E
S

SOURCE:
METIS DEVELOPMENT BRANCH, 1984.

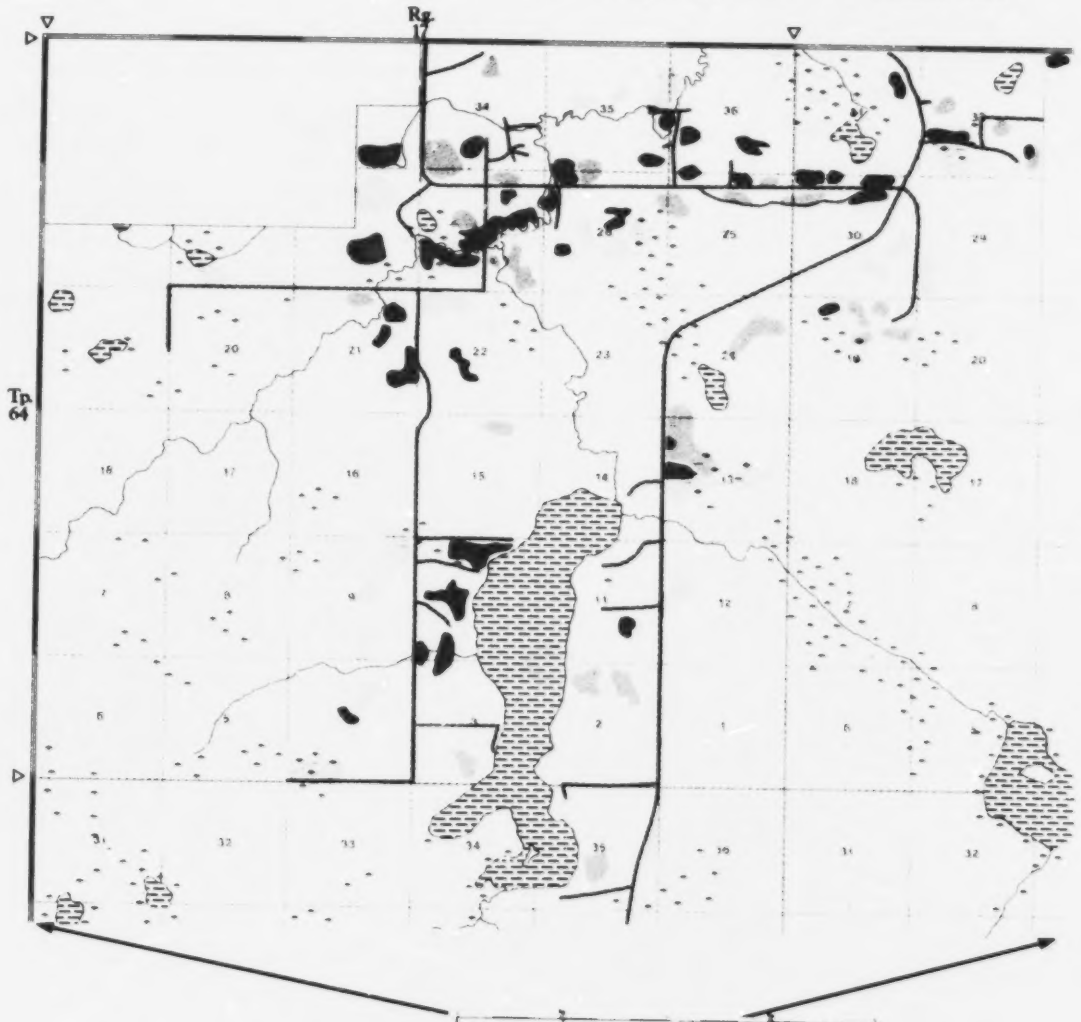
Scale — 1:125,000

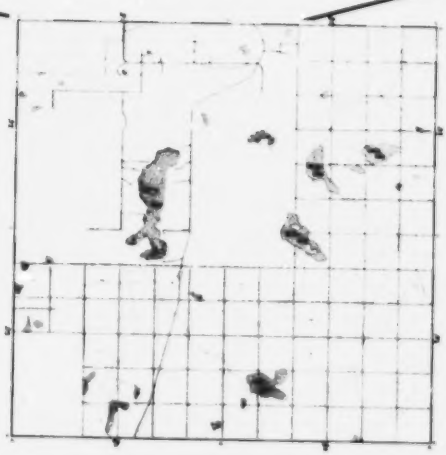
Km. 3.2 1.6 0 .8 Km.

Caslan Metis Settlement

Map 4.7

Existing Agricultural Land Use





Legend

- Feed Grain
- Tame Hay
- Improved Pasture
- Brushed

SOURCE:
ALBERTA MUNICIPAL AFFAIRS SURVEY, 1984

Scale
3.2 1.6 0 .8 Km

Institutions such as the Alberta Vocational Centre (A.V.C.) provide some of the courses relevant to farming. Another farm training program is the Green Certificate Farm Program which was initially jointly funded by Alberta Agriculture and Alberta Advanced Education and Manpower. As Alberta Advanced Education and Manpower are now separate government departments, the program funding was taken over by Alberta Agriculture and the federal Manpower Ministry.

The intent of the program is "to provide a new way for career-minded individuals to learn the operation and management skills for technology required for today's modern farm operations". (Alberta Agriculture and Advanced Education and Manpower, Undated). The program requires a trainee to work on a training farm for a specific period. The training farm is operated by a farmer who is able to provide a good training atmosphere for trainees. The trainee's wages are paid jointly by the training farm owner and the two government departments who sponsor the program. The program is to be modified to allow the trainees to work on their own farms instead of working on a training farm. This modification would require arrangements to have all necessary training be available to the trainees when required (Scott, 1983). Further information on this program is available at the District Agriculturalist's office in Lac La Biche.

The employment opportunities available on and off settlement may have both positive and negative implications. On the one hand, employment may provide the needed capital to maintain and/or expand their farming operations. On the other hand, employment may require the settlers to be away from their farms during critical periods. Given the size of their farms, it would appear that most of the farmers are part-time, and a substantial portion of their income comes from off-Settlement employment. If the employment opportunities are available on or near the Settlement, the farming operations could be managed in conjunction with the off farm employment.

Capital-related factors should also be considered. The establishment of new farms and increased mechanization require new capital inputs. Established settlers who do not plan any expansion of their operations may not be too concerned about capital and credit. It is, however, of some concern to those settlers who are starting new farming operations, or who wish to enlarge their operations. Bank credit is generally not available to settlers as they do not hold title to their land. While some capital could be realized from the sale of farm products and/or from employment, it is still difficult to acquire adequate capital to create a viable farming operation. Maintaining a viable farming operation without large capital outlays will require some resourcefulness on the part of the settlers. The costs of obtaining large equipment could be offset by sharing equipment among settlers, or by leasing equipment which could also be done on a shared basis. In addition, good used equipment can frequently be purchased from other farmers or equipment dealers.

With the large areas of the Settlement still undeveloped, there is a potential for expansion of the type of crop/livestock operations already established. Production levels could likely be increased through better farm practices, some of which may require substantial capital outlays. Large new development on the Settlement will, however, not likely occur until better monetary returns on marketable farm products are realized.

Honey production, an activity common in some areas in the vicinity of the Settlement, could be complementary to forage production. All necessary skills could be learned from successful producers and large amounts of capital are not required. The work occurs mostly during the spring and summer season when the honey is being produced. The commercial production of other market garden crops such as the various berry crops or wild rice should be investigated.

4.6 Forestry

Caslan is located in the Boreal Forest Region and has a mixed forest cover. The typical species with a commercial value are aspen poplar, white spruce, and balsam poplar. Aspen poplar is the most common of the three species indicated as having a commercial value. White spruce is found in limited quantities in areas that are well drained. Jack pine, while found in well-drained areas, is also encountered in sandy, poorly drained areas. Balsam poplar and birch prefer the more moist northern slopes of hills. (Kjearsgaard, 1972). In the wet regions where organic deposits occur, black spruce is the most common tree cover. Other species found in wet areas are tamarack, shrub birch and certain willows.

The information on forest capability in this section is based on the Canada Land Inventory (C.L.I.) forest capability, and discussions with the Settlement residents. To simplify the C.L.I. classification, two categories are used. As no C.L.I. Class 1 through 3 exist on the Settlement, Class 4 for the purposes of this report is considered to have a moderate capability for forestry. The other C.L.I. categories found in Caslan are classes 5 through 7, which, again for the purposes of this report are considered to have a lower capability for commercial forestry. All the above areas are shown on Map 4.8.

The moderate capability category for forestry covers the major portion of the Settlement. The potential productivity for this category ranges from 3.6 to 4.9 m^3/ha per year (cubic meters per hectare per year), are 51 to 70 ft^3/ac per year (cubic feet per acre per year). The most common limitations to tree growth are: moisture deficiency or excess, adverse climate, restricted rooting depth, and low soil fertility.

The lower capability category for forestry has a productivity ranging from 0.7 to 3.5 m^3/ha per year (10 to 50 ft^3/ac per year). Limitations, in addition to those noted for the moderate category, are shallowness to bedrock and stoniness. Within this lower capability category are areas which are subject to periodic flooding and contain poorly drained organic soils. The potential productivity for these areas are less than 0.7m^3/ha per year (10 ft^3/ac per year).

At present only scattered stands of such conifer species as white spruce and jack pine remain on the Settlement. The existing aspen poplar forests, in terms of supply, have a great potential for development. The major problem preventing the development of this resource is that few economic uses have been found for it (Co-West Associates, 1981). This situation could change in the future. Experiments have been conducted on using wood fibre as cattle feed because of its relatively high protein content (Co-West Associates, 1981). Limited quantities of aspen fibre have been mixed with other wood fibre in the production of paper. (A. Pollock, 1984). In addition, new methods of treatment of raw aspen logs have resulted in a wood product suitable for construction of quality furniture, as well as for use as a finished wall surface (A. Pollock, 1984).

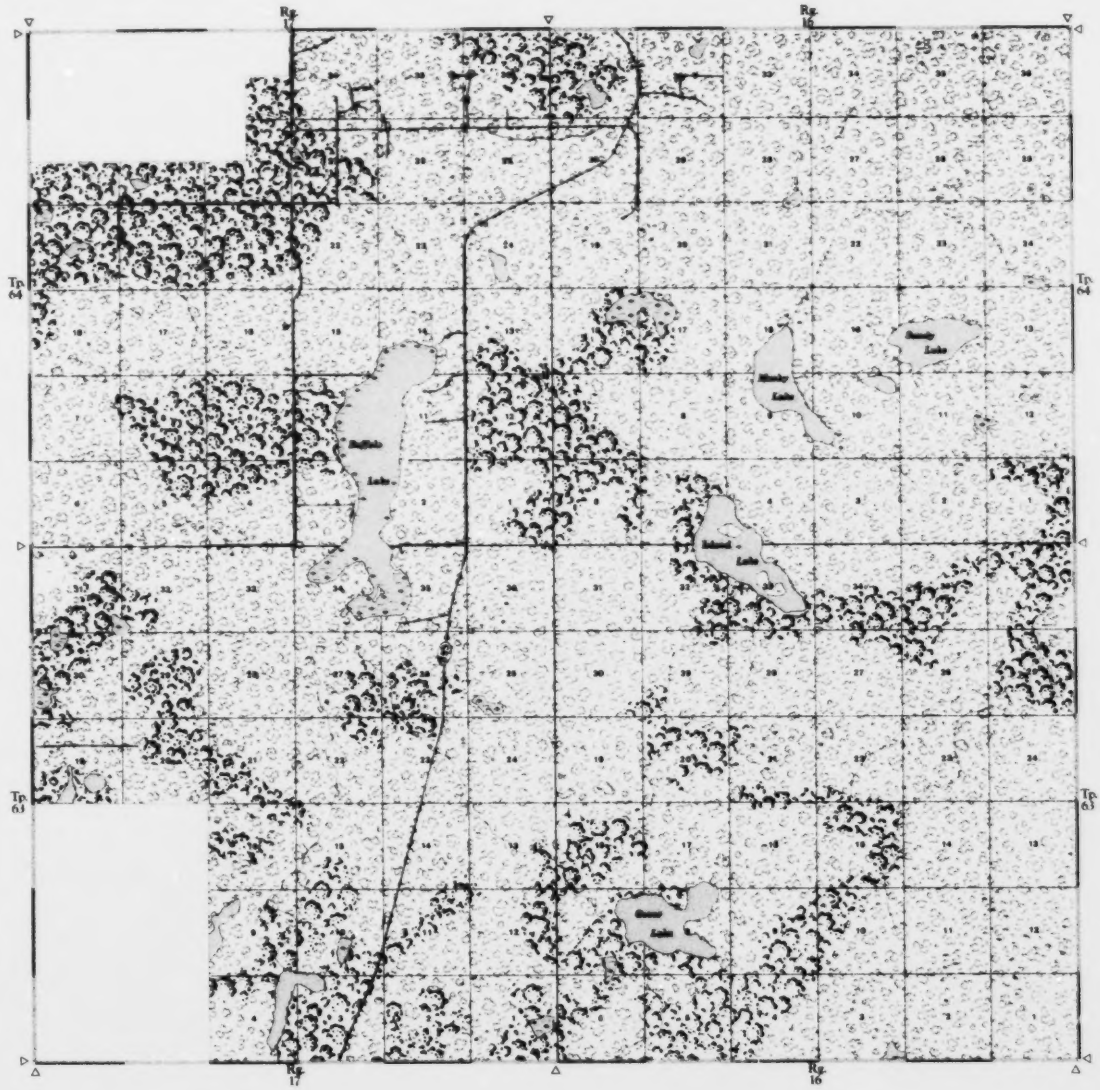
The future viability of forestry on Caslan depends upon good management practices. The forest management aspect would include the taking of timber inventories, and establishing annual cuts to ensure the orderly harvesting of this resource. Any significant harvesting would create a need for a reforestation program. A reforestation program should consider a need for the introduction of some conifer species as well as maintaining and improving existing deciduous timber stands. Because there is a long span of time between the initiation of any reforestation program and the first timber cutting; any desired reforestation program should begin now.

As soil conditions with a good capability for forestry production may also have a good capability for agricultural production, areas to be allotted for reforestation should be located where they would not conflict with proposed agricultural uses.

Caslan Metis Settlement

Map 4.8

Forestry Capability



Legend

Moderate Capability

Lower Capability

N

W E

S

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

SOURCE:
CANADA LAND INVENTORY. 1984

4.7 Wildlife Resources

4.7.1 Ungulates

The ungulates (hoofed animals) most commonly sighted on the Caslan Metis Settlement are moose, mule deer, and white tailed deer.

Moose require large blocks of forest or shrub cover. They thrive on tender shoots, twigs, and leaves found in the area. Moose home range, over the year, is usually less than 10-12 square kilometers (Knetman, 1984). On the Caslan Metis Settlement, moose likely move only short distances and probably winter on a portion of their summer range (Knetman, 1984).

The relationship of both the whitetail and the mule deer to the summer and winter ranges is similar to the moose. As the deer are more affected by winter conditions than the moose, they use a wider range of their summer habitat (Knetman, 1984). Diet of both the deer species consists of shrubs (leaves and buds), grasses, and cultivated crops. Tree bark is only eaten when other food sources are limited. Forested land and/or rough topography are essential to provide cover for both species.

Map 4.9 indicates the Wildlife Key Areas for the three species being discussed here. The key areas, which are indicated by shading on the map, are those areas where the animals gather because of the availability of suitable habitat. References to aerial photography, visual inspection of the site, and other data appear to confirm that a suitable habitat, exists in the shaded area noted on Map 4.9. In addition, Canada Land Inventory (C.L.I.) data give land in this area a Class 2 and Class 4 capability for the production of ungulates. Class 2 and Class 4 capabilities range from slight to moderate limitations (for ungulate production). Land related characteristics which would limit production of suitable food and cover for these ungulates would be poor soil fertility, adverse topography, poor landform distribution, and excessive moisture condition.

There are no figures on the numbers of moose, whitetailed deer, and mule deer on the Settlement but sightings of these animals by the residents are frequent. Some hunting is carried out by residents to provide a supplemental food source.

Of the three species discussed, moose and mule deer are the most susceptible to disturbance by humans (Knetman, 1984). The human disturbance, in addition to hunting, could also take the form of destruction of the animal's habitat by the expansion of agriculture and ranching. Disturbances of this nature could cause the animals to abandon an otherwise suitable habitat. If the maintenance of these species on the Settlement is deemed desirable by Council, hunting and/or agricultural expansions should be controlled in specific areas. Game ranching, which is described in some detail in Section 8.2.3, could be a means of supplying game to the Settlement residents.

4.7.2 Trapping

Trapping, which once provided families on the Settlement with additional income, has now declined in importance. Last year only a handful of residents derived some of their income from trapping. The animals available for trapping for beaver, muskrat, coyote, squirrel, and mink.

No figures on animal populations on the Settlement are available, but local wildlife officials advise that good habitat for fur bearing animals exists in the area bordering the Settlement. As the landforms adjacent to and on the Settlement are similar, the prospect for continued trapping on the Settlement appears to be good.

4.7.3 Waterfowl

The Settlement area generally has a poor capability for supporting waterfowl production. The exceptions are Island Lake, Sandy Lake, and Goose Lake (See Map 4.9). According to local wildlife officials, these three lakes are quality lakes with good habitat elements for the production of ducks, Canada geese, and swans.

The C.L.I., which bases its rating on the ability of an area to create and maintain a suitable habitat for waterfowl production, generally supports the wildlife official's observation. Sandy Lake has C.L.I. Class 1 rating, while Island Lake and Goose Lake both have a Class 2 rating. Areas with a Class 1 rating have no significant limitations to waterfowl production, while the areas with a Class 2 rating have only a slight limitation.

4.7.4 Fishing

Fishing on the Caslan Metis Settlement is primarily recreational in nature. Buffalo Lake is the only lake on the Settlement with ample stocks of jackfish and perch. Other lakes on the Settlement could likely be stocked for recreational fishing. The matter of stocking lakes with fish will be considered again when fish farming is discussed in Section 8.2.3.

Caslan Metis Settlement

Map 4.9

Wildlife Key Area

Legend

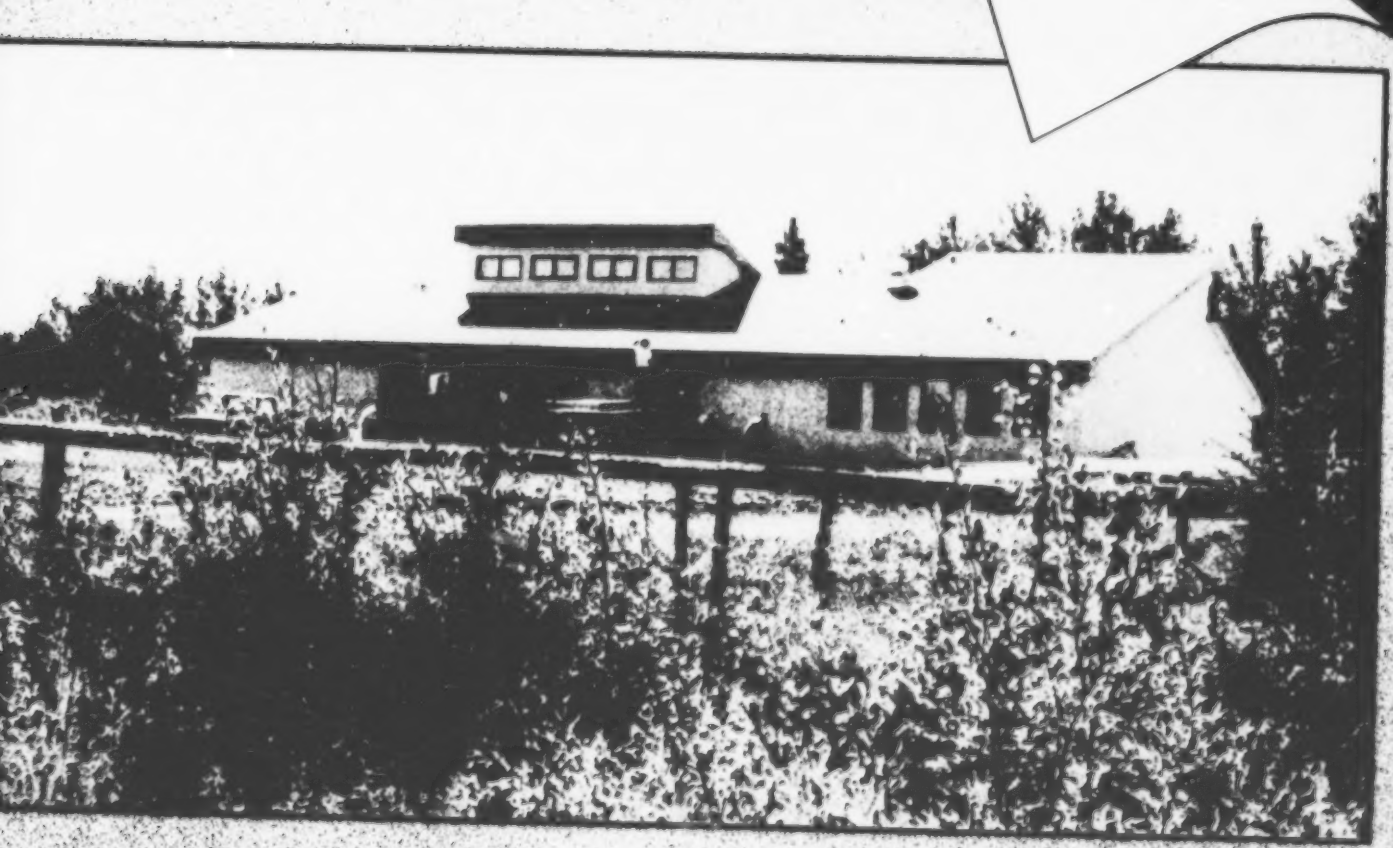
- Area supporting White Tailed Deer
- Area supporting Moose, Mule Deer and White Tailed Deer
- Area supporting Moose and White Tailed Deer
- Area residents consider equally good for game
- P — Waterfowl Production

SOURCE:
ENERGY AND NATURAL RESOURCES,
FISH AND WILDLIFE DIVISION, 1984.

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

HUMAN RESOURCES



5.0 Human Resources

5.1 Administration

The Caslan Council, consisting of five locally elected residents, assisted by a co-ordinator and a clerk, meet regularly to discuss the needs of the Settlement, decide on applications for Settlement membership and land allocations, and submit recommendations for expenditures. The Metis Development Branch, now under Alberta Municipal Affairs, also has an area supervisor in St. Paul to assist the four eastern settlement Councils. Responsibility for roads, education, housing, and utilities has been largely handed over to other government departments and agencies.

Activities on the Settlement are financed through three sources:

1) Provincial government funds (vote funds) budgeted annually by Alberta Municipal Affairs;
2) Monies derived from the Metis Betterment Trust Fund which includes revenue from oil surface leases, right-of-way compensation (seismic work), land levies, and interest on trust funds; and
3) Municipal Debt Reduction money.

5.2 Population

The 1982 Metis Development Branch census suggests a Settlement population of 655. At this same time 180 of the Settlement memberships were living off the Settlement. Historically families and individuals have periodically moved on and off the Settlement due to employment, schools, training opportunities, or for personal reasons. This movement has frequently resulted in relatively wide fluctuations in the population. While the population of the Settlement for a specific period could be established with reasonable accuracy, the mobility of the residents would cause difficulty when a need to prepare population projections to determine future infrastructure needs arises.

5.2.1 Population Trends

In the 1940's, interest in settlement in Caslan developed, but it was not until 1950 that settlement was finally permitted (Nichols, 1979). From an initial population of 45 in 1950, the population reached a total of 406 in 1967 - a 5.2% per annum increase.

Over the next decade (1968-1977) the population increased by 50, or approximately 1% per annum. With a birth rate estimated at 3% (Nichols, 1979), there was likely a modest migration off the Settlement at this time. The timing of this off-Settlement migration should be viewed together with the economic conditions in the province at the time. At this time large petroleum process plants were being built in Fort McMurray and large construction projects were proceeding in other areas in the province. Job opportunities were available to employable people seeking employment. An estimated 10 adults from Caslan were employed by construction firms in Fort McMurray (Nichols, 1979), and other residents may have been employed elsewhere.

Between 1978 and 1983 the population increased by 194 or 5.1% per annum. After allowing for natural population increase, there would appear to be a modest migration back to the Settlement at this time. During this period construction activity in Fort McMurray and other areas of the province was declining. While there was a decline in employment opportunities, the costs of land and housing were still relatively high. The combination of lack of employment, high housing costs and the traditionally strong ties of the residents to the Settlement would have caused many families to resettle in Caslan.

Population by Age and Sex - 1983

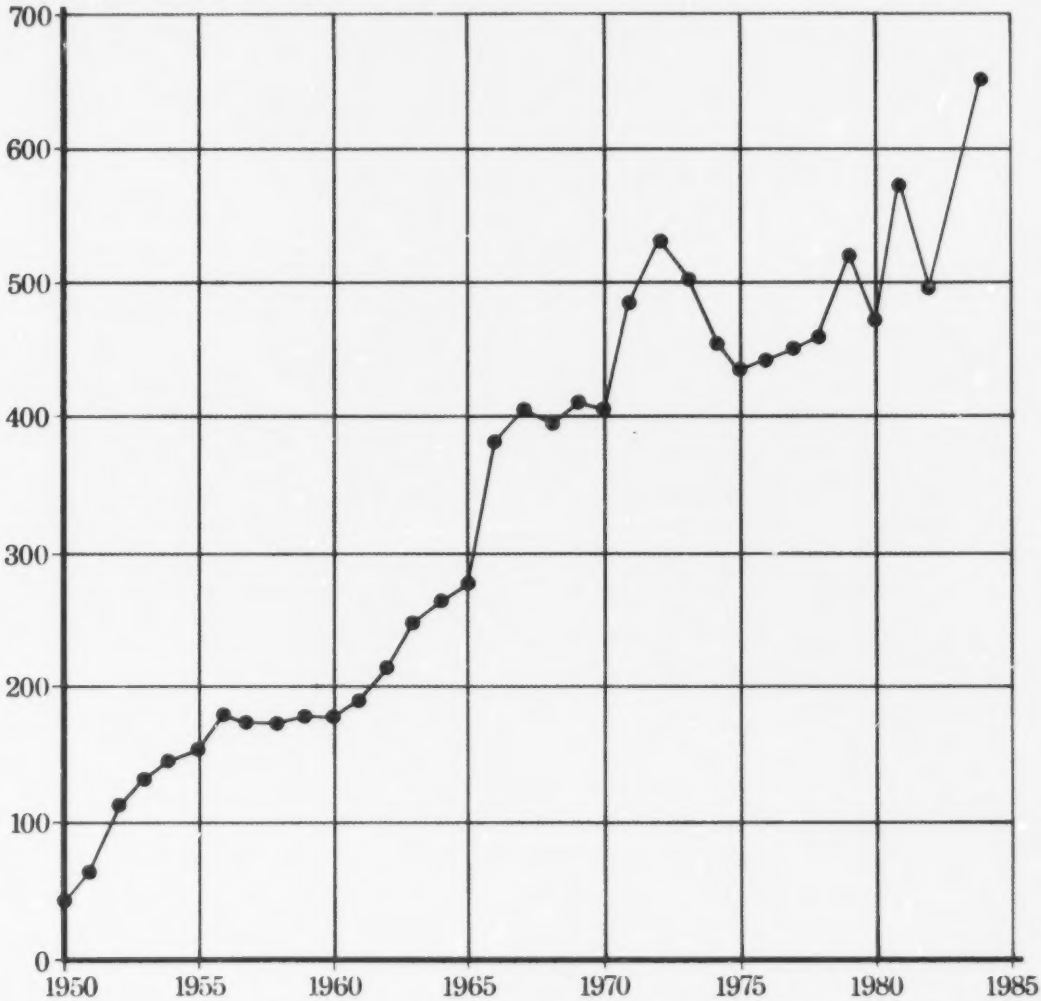
Table 5.1

AGE	Living on Settlement			Living off Settlement		
	Male	Female	Total	Male	Female	Total
0 - 4	44	40	84	10	6	16
5 - 9	47	44	91	16	18	34
10 - 14	54	38	92	16	15	21
15 - 19	43	43	86	6	7	13
20 - 24	35	30	65	9	10	19
25 - 29	37	26	63	8	9	17
30 - 34	24	24	48	8	6	14
35 - 39	14	15	29	6	0	6
40 - 44	8	4	12	5	3	8
45 - 49	11	9	20	2	2	4
50 - 54	9	7	16	3	2	5
55 - 59	9	4	13	2	0	2
60 - 64	5	4	9	3	3	6
65 and over	13	8	21	3	1	4
Birthdates Unknown	1	5	6	4	7	11
TOTAL	354	301	665	91	89	180

SOURCE: METIS DEVELOPMENT BRANCH, 1984.

More data on the population composition by age group are becoming available. These data tend to indicate that the age of the Settlement residents is increasing. For example, in 1979 approximately 48% of the Settlement population was under the age of 15 years (Nichols, 1979), while in 1983 this age group made up only 40% of the population. In addition, Table 5.2 indicates that the percentage of pre-school children is decreasing while the adult population is increasing.

Population Change 1950-1983 Table 5.2



SOURCE: METIS DEVELOPMENT BRANCH, 1984

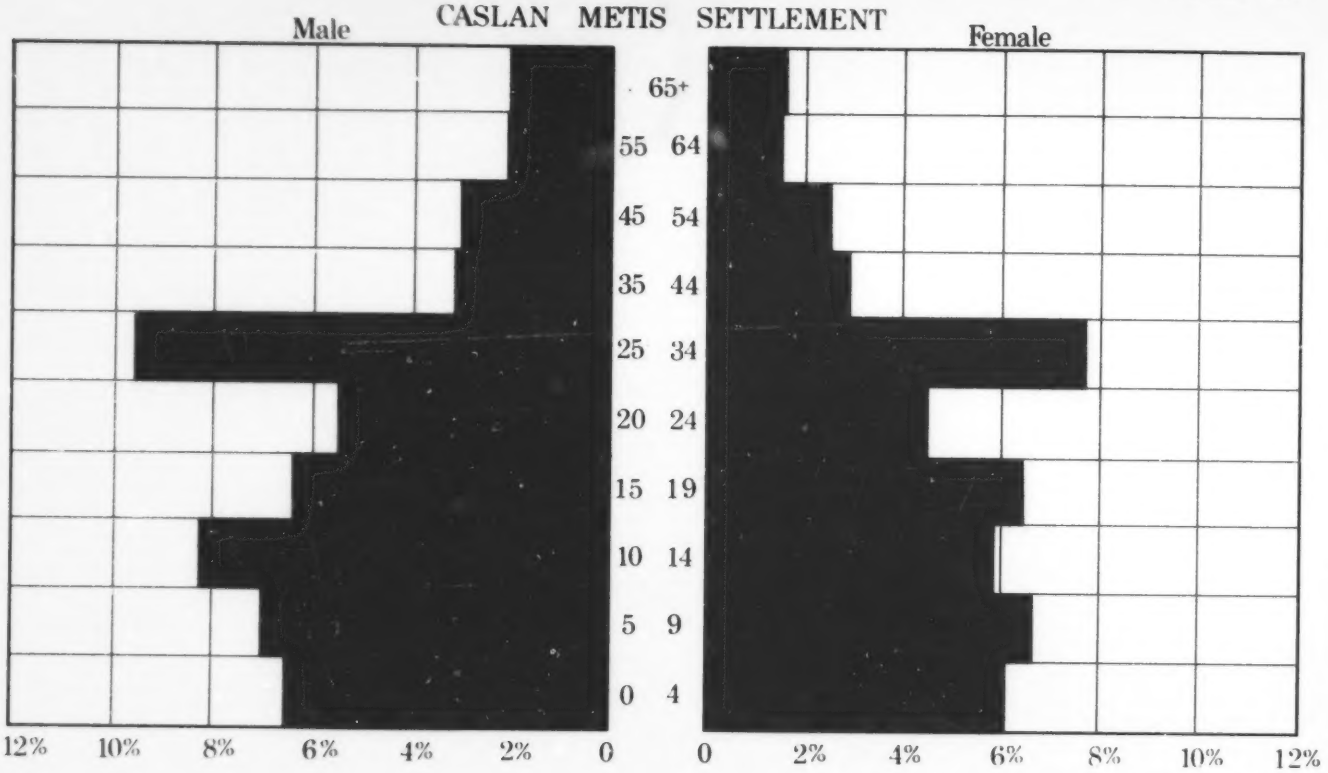
The population composition by age group for the Caslan Settlement and the province differ in some of the groups. Caslan has a higher percentage of its population below the 19-year age group, and a lower percentage above the 35-year age group. For the age groups 20 to 34 the percentage for the Caslan Settlement and the province are similar (see Table 5.3).

Approximately 27% of the Settlement residents are presently living off the Settlement (see Table 5.1). Some of the residents may decide to live away from the Settlement permanently, however, all residents living away from the Settlement have the option to return if they so desire. A sudden influx back to the Settlement would place pressure on housing and other local infrastructure.

Population Pyramids

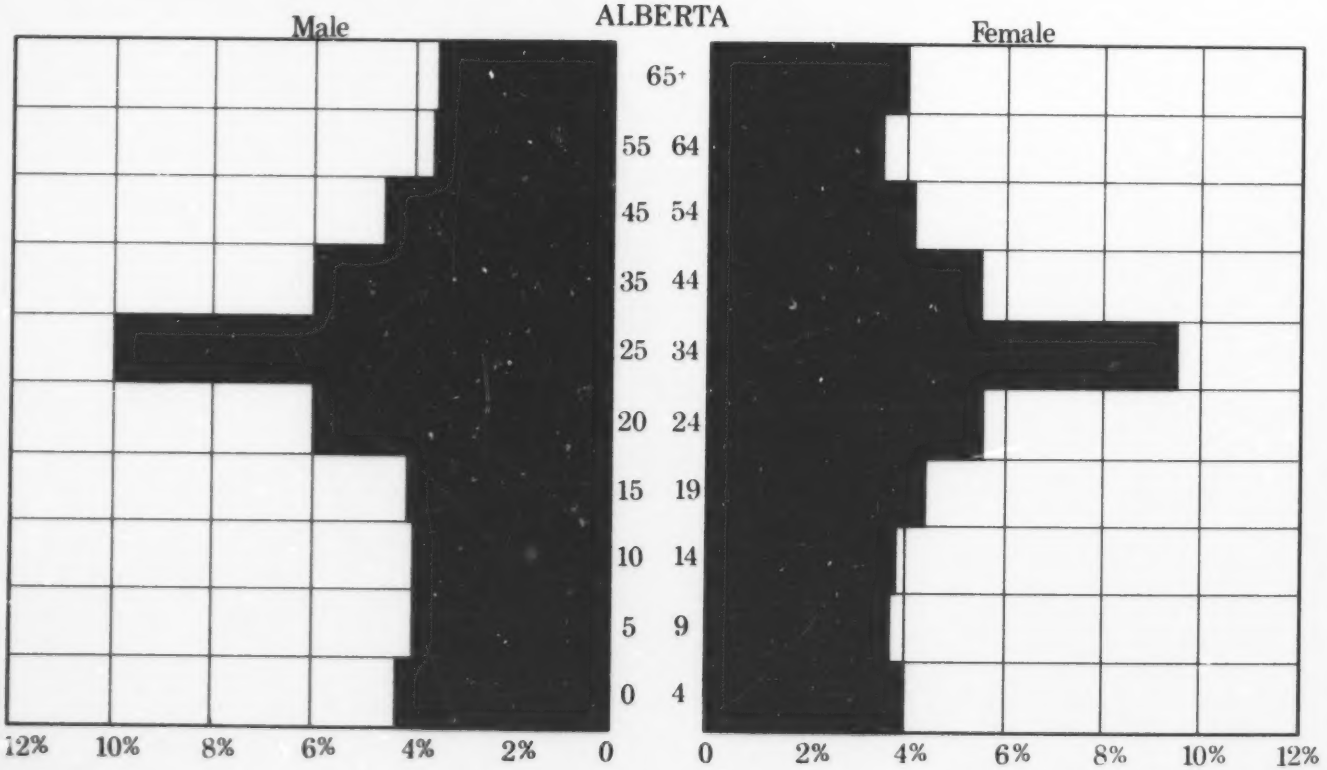
Table 5.3

CASLAN METIS SETTLEMENT



SOURCE: METIS DEVELOPMENT BRANCH

ALBERTA



SOURCE: 1981 FEDERAL CENSUS.

The change in family structure is attributable to the decrease in persons per family unit. As the families have fewer children over time, the family size drops.

The family size on the Settlement remained steadily at 6 persons per family unit until 1976. Between 1977 and 1979 the family unit figure dropped to 5.3, and to 4.6 in 1983.

Population Profile — Table 5.4

AGE GROUP	1969	1974	1979	1983
Pre School	106(25.7%)	94(20.5%)	88(16.8%)	102(15.6%)
In School	124(30.0%)	148(32.5%)	159(30.5%)	Not Available
Adults	183(44.3%)	216(47.2%)	275(52.7%)	Not Available
Persons per Family	6.0	6.0	5.3	4.6

SOURCE:
METIS DEVELOPMENT BRANCH, 1984

5.2.2 Implications of Trends

The combination of a maturing population and a trend toward smaller families will have an influence on future planning decisions. For example, the demand for housing for larger families will decline. The needs of the older residents differ from those of the younger residents. As the aging process frequently results in a lesser degree of mobility, the needs of this older group will be the availability locally of food outlets, as well as such services as drop-in centres and other social organizations.

5.3 Employment

Employment on Caslan is divided between full time and temporary employment for both the government and the private sector. The largest single employment source for local residents is farming. Other employment consists of government work, manufacturing, oil and gas industry, some work in the trades, construction, and trapping. The employment base is outlined on Table 5.5.

Employment Base — Table 5.5

Type of Employment	Government		Private Sector on Settlement		Private Sector off Settlement	
Permanent/Temporary	P	T	P	T	P	T
Metis Development Branch	1					
Settlement Staff	4	1				
Construction				7		
Farming				30		
Heavy Equipment Operators				3		
Manufacturing				3		
Oil and Gas Industry					2	
Trapping				2-3		
Education						
a) teacher's aides	2*					
b) school lunch program	3*					
c) bus drivers	3*					

*Government off-Settlement

SOURCE: CASLAN SETTLEMENT COUNCIL 1984

As of September 1984, only one Caslan resident was employed by the Metis Development Branch. At present there are one part-time and four full-time residents employed in varying capacities by the Settlement Council. Other government employees include three for the lunch program, two teacher's aides, and two bus drivers. Permanent employment in the public sector is expected to remain stable or experience a slight increase in the foreseeable future.

The number of local residents employed in the private sector on the Settlement varies with the season and the demand for their services. Due to a lack of a market for garments normally produced by the Caslan Metis Enterprises, this business venture can only employ 3 local residents at the present time. Three residents are employed by Caslan Cats as heavy duty equipment operators. Seven residents are apprentice carpenters employed seasonally in the construction of residences for Settlement families. As many as 30 families depend for some of their income on farming. Several residents supplement their family income through trapping.

Only two Settlement residents are presently employed in petroleum related enterprises in Fort McMurray. This figure is considerably less than the number employed during those years when activity at Fort McMurray was at a peak. Increasing construction activity in the province would cause more residents to seek off-Settlement employment.

There will likely be a need for additional staff on the Settlement in both the public and private sector in the near future. The new water treatment facility will likely require a full-time or part-time operator. Additional staff will be required to operate both the commercial enterprises and the community facilities in the new community centre to be opened soon. As many as 25 to 30 residents could be employed by Caslan Metis Enterprises if market conditions for their products were to improve (Patenaude, 1983).

The industry with a potential for creation of large numbers of employment opportunities on the Settlement is agriculture. There are still vast areas on the Settlement suitable to be developed for grain/forage crops and for cattle ranching. This development will, however, require better marketing conditions for farm products, and access to capital to create viable farming operations. Other industries which have job creation potentials are forestry and game ranching.

HOUSING & INFRASTRUCTURE

6.0 Housing and Infrastructure

6.1 Housing

The first houses on the Settlement were constructed with log walls and sod roofing. These houses were typically small and poorly insulated. Standard (conventional wood frame) homes were later constructed on the Settlement. The various housing programs, initiated over the last twenty years, have helped in replacing all of the old housing stock. The quality of the new housing stock, and the housing utilities included, have improved with the availability of the various housing programs applicable to the Settlement. All of the Settlement houses are located on property where access to dirt or gravel roads is feasible.

Map 6.1 shows the locations of rural homes by funding source. Map 7.1 shows hamlet residence locations and their respective funding sources. Due to the transient nature of the mobile homes, changes in occupancy, and the new home construction; the figures and housing location provided are assumed to be correct only at the date the inventory was taken.

6.1.1 Housing Programs

Caslan has been actively participating in the various housing programs. The most significant housing and repair programs are discussed below.

6.1.1.1 Metis Development Branch (MDB) Housing

The Metis Development Branch had primary responsibility for housing on the Settlement until 1977. Between 1962/63 and 1977, 467 housing units were provided on eight Metis Settlements at a total cost of $1,646,900. The overall average cost per unit for this housing was $3500. This housing program provided an estimated 80% of the housing stock from 1962 to 1977 (Alberta Housing and Public Works, 1977).

At present there are 39 housing units from this source on the Caslan Settlement. Most of this housing is in fair to poor condition, and some of the original MDB houses have been abandoned and replaced with new housing stock.

6.1.1.2 Rural Mobile Home Program (RMHP)

This program, which was formerly known as the Emergency Trailer Program (ETP), is administered by Alberta Mortgage and Housing Corporation. The program's purpose is to provide temporary housing to families in need of immediate shelter. The program provides single-width trailers at a minimum monthly rent of $200. All trailers are provided through a rent-to-own arrangement. After the total cost of the trailer plus all other associated costs have been paid, the occupant becomes the owner of the unit. The occupant, however, does not build any equity in the unit through monthly rental payments. Alberta Mortgage and Housing Corporation, with the assistance of the Settlement's Waskavigun Association, is responsible for the placement of mobile homes on the Settlement. There are 12 RMHP trailers on the Settlement at the present time.

6.1.1.3 Rural Home Assistance Program (RHAP)

The RHAP is administered by the Rural Home Assistance Branch, Department of Housing. Its purpose is to help Metis families build and repair their own housing. As required by the Program, Caslan has established a registered non-profit housing association (Waskayigun Association). This program functions in cooperation with the local Waskayigun Association

rather than with individual settlers. Grants of $19,500 per unit for construction materials are provided by this program, while the labour component is funded separately by the Metis Settlement Carpentry Training Program. The Association may recover from each recipient a portion of the cost of the material and labour paid for through this grant for the recipient's house in the form of actual cash pay-back or equivalent value of donated labour. (L. Collins, 1984). There are 45 housing units constructed under this program in Caslan. This housing program also allocates funds for house repair. It has been providing funding for repairing up to a maximum of 4 housing units per year, per Settlement.

6.1.2 Housing Repair Programs

6.1.2.1 Residential Rehabilitation Assistance Program (RRAP)

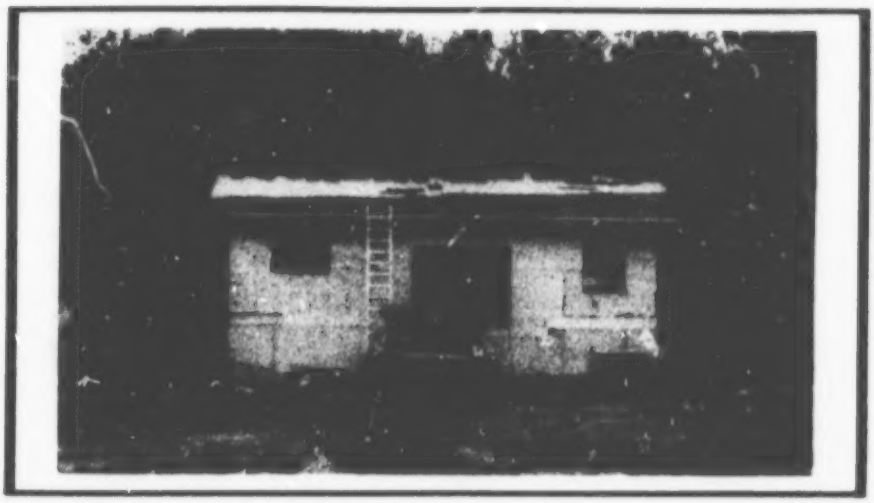
R.R.A.P. is a federal program administered by the Metis Association of Alberta for C.M.H.C. The program provides loans and grants to help bring the Settlement homes to better standards. This was a comprehensive program and was used extensively by the residents of the Caslan Metis Settlement. Thirty R.R.A.P. approvals have been granted to Caslan at a financial support total of $135,000. (Alberta Housing and Public Works, 1977).

6.1.2.2 Emergency Repair Program (ERP)

This program is also administered by the Metis Association of Alberta for CMHC. The program provides building materials to families who wish to upgrade their homes. A sum of $1500 per house is provided for this purpose (T. Bolseng, 1984). This program is primarily intended to provide funds for required house repairs until the resident is able to move to a newer or better house. Residents of the Caslan Metis Settlement have made extensive use of this program.

6.1.2.3 Seniors' Home Improvement Program (SHIP)

This program, which is administered by Alberta Housing and Public Works, is available to all senior citizens who live in their own homes. An amount up to $3000 in grants is available under this program for repair and improvement of individual homes. In addition to materials and labour for house repair, the residents may purchase such appliances as stoves, refrigerators, washers, and dryers. Residents of the Caslan Metis Settlement have made use of this program.



6.1.3 Present Housing Situation

The MDB homes, which are the most common on the Settlement, comprise 36.0% of the total occupied housing stock. RHAP homes make up 41.0% and RMHP homes make up 10.0% of the occupied housing stock. The "other" housing is housing that was not funded by any of the three funding programs noted above. An inventory of the present occupied housing stock is provided in Table 6.1.

Housing Stock — Table 6.1

HOUSING TYPE	Number	Percentage
Metis Development Branch	39	36
Rural Home Assistance Program	45	41
Rural Mobile Home Program	12	10
Other	14	13
Total	110	100

SOURCE:
CASLAN METIS SETTLEMENT COUNCIL, 1984.

It was impossible to inspect all the houses on the Settlement to determine their conditions. Any observations made from visual inspections would be subjective. In discussing the matter with the residents of the Settlement it was agreed that the following generalization could be made: the RHAP houses are mostly in good condition, while the MDB houses are in generally poor condition.

6.1.4 Future Housing Needs

There is a need for an additional 22 housing units. This figure is based on the difference between the number of units built this year, and the number of applications for new housing. Additional demand for housing could be generated through new family creation, and through settlers moving up to agricultural allocations when road access is provided.

One alternative to satisfy these housing needs would be to repair houses that are deemed to be in repairable condition. As the MDB housing stock is in generally poor condition, these should be considered for either partial or comprehensive repair. Funds for repair are available under the ERP and RHAP programs.

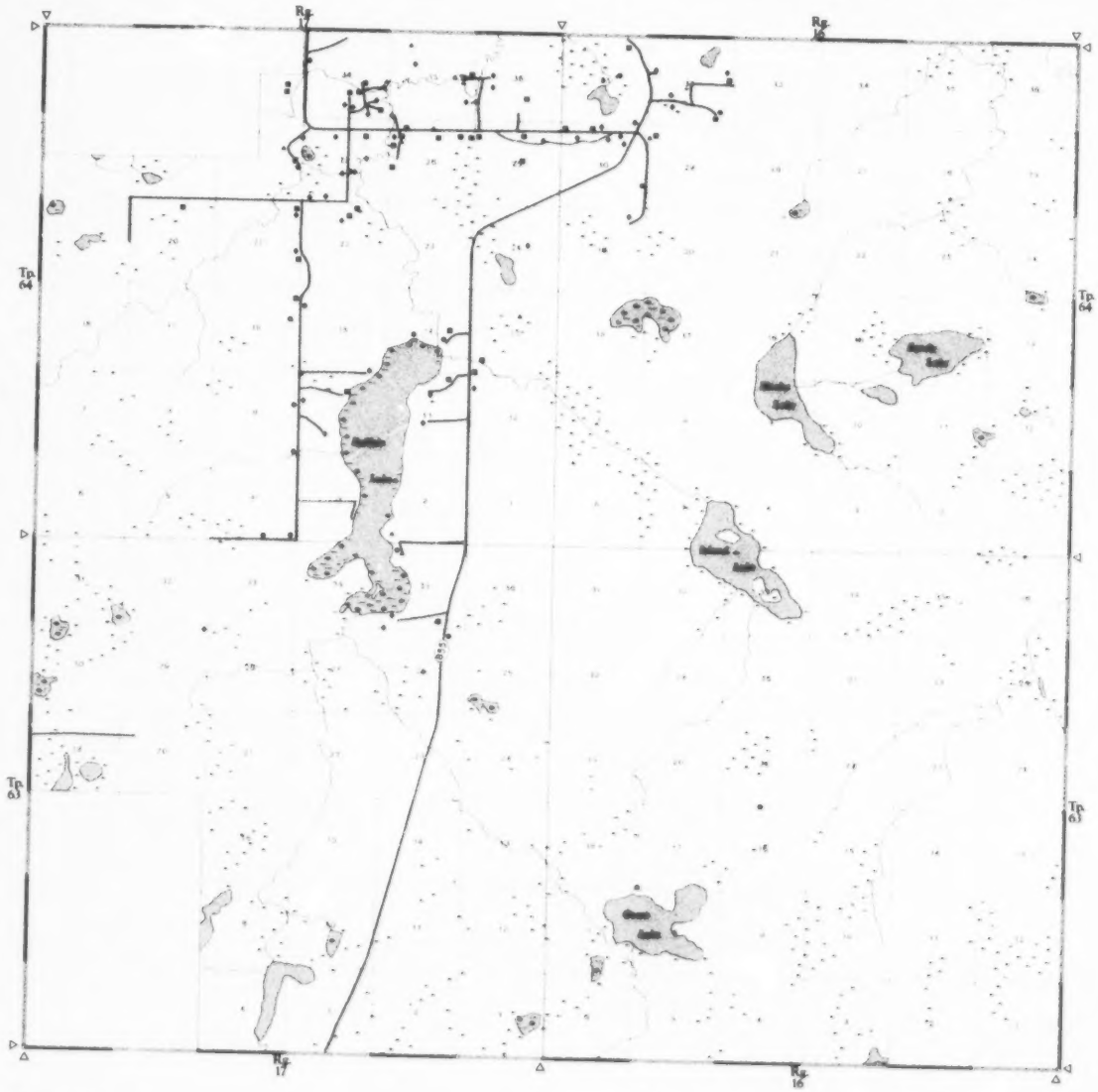
Another alternative would be to increase the number of homes constructed under the Rural Home Assistance Program. The last two years saw a minimum of 6 RHAP homes built per year, and the possibility of completing 6 or more houses per year should be investigated by the Settlement's Waskayigun Association.

Trailer units under the Rural Mobile Home Program could serve to overcome unsafe and/or overcrowded housing conditions. The units could also be used when an emergency situation has been caused by a fire or other misfortune. Trailer units could be delivered quickly if a need, consistent with Alberta Mortgage and Housing Corporation's mandate to provide such units, is established.

Caslan Metis Settlement

Map 6.1

Rural Housing Locations



Legend

- Metis Development Branch
- Metis Settlement Housing Program
- Rural Mobile Home Program
- Other Sources

N
W
E
S

SOURCE:
ALBERTA MUNICIPAL AFFAIRS METIS DEVELOPMENT BRANCH, SETTLEMENT COUNCIL, 1984

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

6.2 Infrastructure Services

Infrastructure facilities in Caslan include: water supply, transportation, electricity, waste disposal, communication, health services, education, police protection, recreation, government offices, fire protection and public transportation.

An all-weather gravelled road provides the hamlet with an access to Highway 663. Roads continuing from the hamlet to the east and the south are in generally good condition, being maintained by Alberta Transportation. Highway 855, a portion of which passes through the Settlement, has been extended to join Highway 633. This should assist in opening up the southern part of the Settlement to agricultural development. There were approximately 3 miles of road built on the Settlement in the last two years. These recent extensions have been undertaken in several areas of the Settlement to provide new settlers with road access. Also, access has been improved to the new recreational facilities on Buffalo Lake. The Settlement Council is responsible for setting priorities for new road construction. Future plans call for more road construction to make more potential farm land accessible. To achieve this end, Council is considering development of roads in a north-south direction on the west side of the Settlement (See Map 6.2). Future plans also call for road construction in an easterly direction to provide a direct access to Kikino. Future road extensions should consider: available funds for powerline extensions, agricultural capability, forestry capability, recreational potential, and groundwater supply and quality.

Electrical power is available to most of the established settlers in Caslan (See Map 6.2). In some instances electrical power has been extended to residents some distance from the more densely-populated areas of the Settlement. This will allow new settlers who locate adjacent to a powerline access to power with minor additions to existing powerline infrastructure.

Homes are heated with propane, oil, and wood. The residents have indicated a desire to have natural gas for their homes. Meetings between the Metis Settlements of Kikino and Caslan and the Lac La Biche and District Natural Gas Co-op to discuss the possibility of the Co-op supplying natural gas to the Settlement have taken place. No final decision on the Settlement's request for natural gas has been made to date (McArthur, 1984). A solid waste disposal site exists on SE 1/4 sec 23-64-17-W4. Council has budgeted for garbage removal on the Settlement for the 1983-84 fiscal year (B. Miller, 1984).

Communication services include telephone, radio, and television. About 57% of the households on the Settlement have telephones (Municipal Affairs Survey, 1983). Two television stations or channels are received. The location of the nearest centre which publishes a newspaper is at Lac La Biche. The Lac La Biche Post carries some Caslan Settlement news.

The nearest hospital, medical services, and ambulance are located in Boyle, which is 30 kilometers away. Some of the residents choose to use the more extensive medical facilities available at Lac La Biche. A public health nurse holds a clinic in the Settlement office once a month. Nursing services are available to the elderly in their homes.

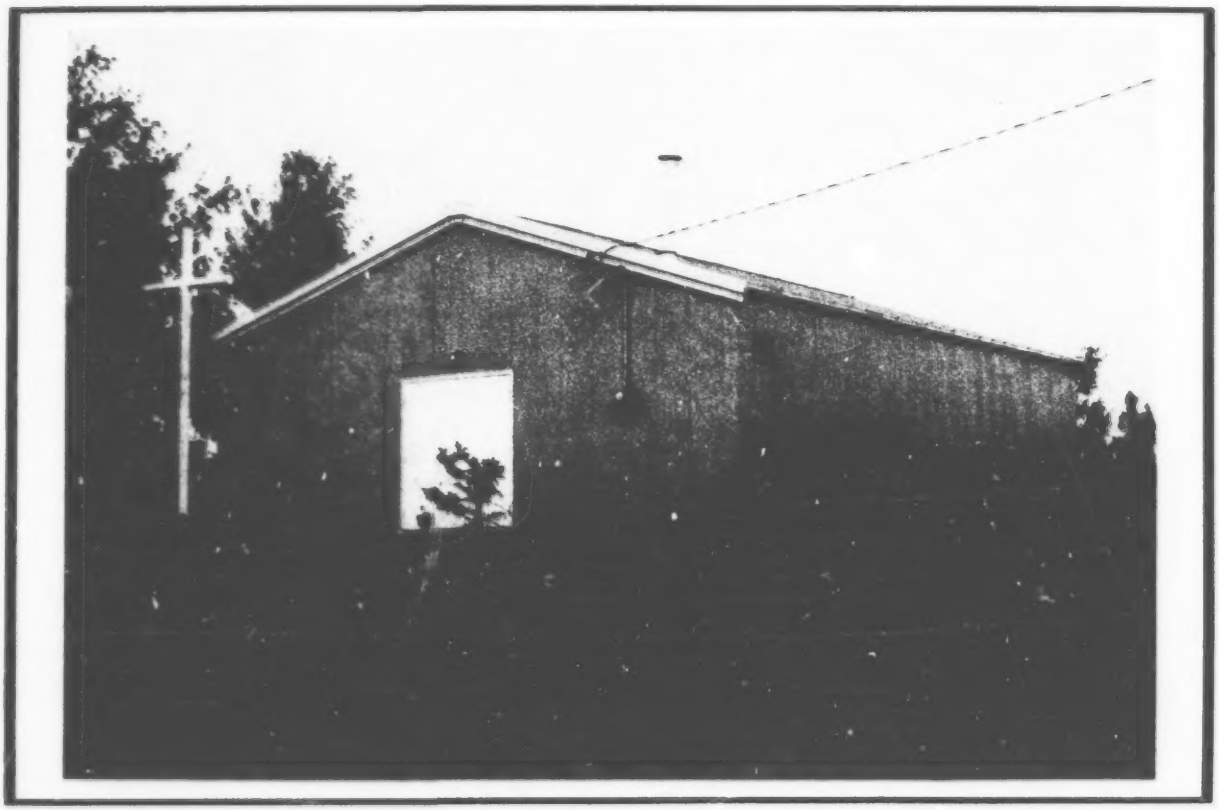
Grades K through 6 attend school outside the Settlement at the hamlet of Caslan. Junior and Senior High School students attend classes at Lac La Biche. Some students attend the Alberta Vocational College (A.V.C.) which is also located at Lac La Biche. Buses from the Settlement deliver the children to the above educational facilities.

Caslan Settlement is policed by the Boyle R.C.M.P. The only government office on the Settlement is the Administration Office. Two churches are located on the Settlement; one church is situated within the hamlet while the other is approximately one-half mile east (of the hamlet). Locations of most of these facilities are noted on Map 7.1.

Land for recreational facilities has been allocated in the SE 3-64-17-W4 adjacent to Buffalo Lake. Recreational facilities proposed for the site include campgrounds, fishing area, and ball diamonds. In addition, the rodeo grounds presently located east of the hamlet will be relocated to this new recreational area.

There is no organized fire protection on the Settlement. Space for a fire truck is available in the new water treatment plant. There are no immediate plans to purchase a fire truck, but the acquisition of one is being considered for some future date.

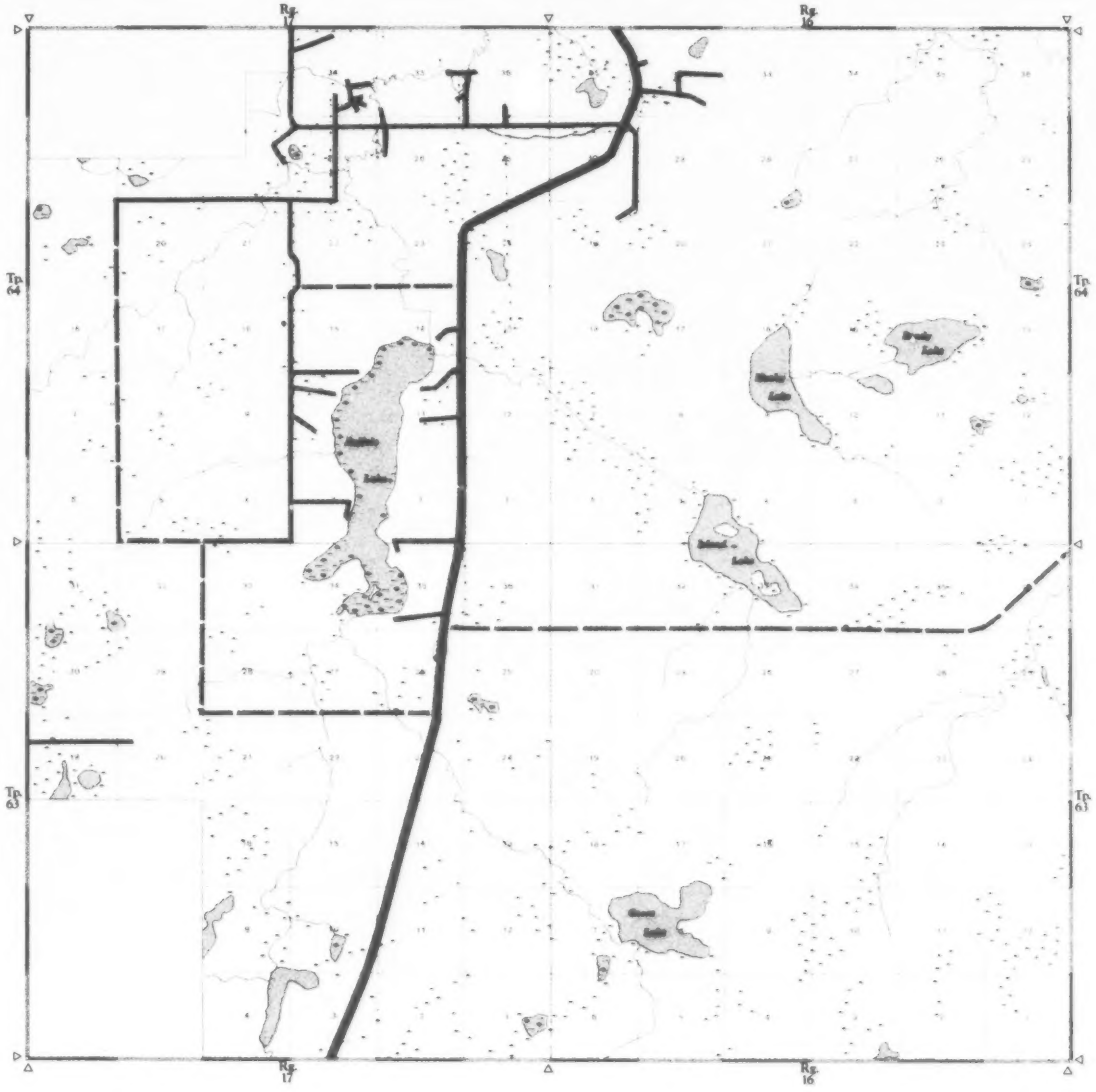
There is no bus service serving the Caslan Metis Settlement at the present time. Buses, which travel daily between Edmonton and Lac La Biche, stop at the Village of Boyle. Residents must use private vehicles to reach Boyle before they could utilize this bus service. The Regional Economic Development Council (REDC) has petitioned both Greyhound Bus Lines and Red Arrow Express to consider rerouting some of their buses, travelling between Boyle and Lac La Biche, to use Highway 663. This would bring the bus service close to the Settlement hamlet. There has been no commitment from either company to provide the requested service (McArthur, 1984).



Caslan Metis Settlement

Map 6.2

Road Network and Powerlines



Legend

- Secondary Road
- Improved Road
- Future Road
- Powerlines

N
W
E
S

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

SOURCES:

(A) ALBERTA TRANSPORTATION, 1984.

(B) TRANS ALTA UTILITIES, 1983.

SETTLEMENT HAMLET

7.0 Settlement Hamlet

The Settlement hamlet is located near the north west corner of the Caslan Metis Settlement and functions primarily as a centre for community facilities. The area outlined on Map 7.1 was arbitrarily chosen to more clearly illustrate the locations of the existing community buildings and some surrounding housing. The community buildings include: the Settlement Administration Office, Roman Catholic Church, Senior Citizens Centre, water treatment plant, community centre, and two small warehouses. A garment factory is also located within the hamlet area.

The water treatment facility consists of a water reservoir, water treatment plant, water point, and a fire truck bay. A backwash lagoon, which is part of this facility, is located north of the Settlement Administration Office. Water from this treatment plant will be used by the Settlement Administration Office, Senior Citizens Centre, garment factory, and the community centre. Sewage from these facilities will be collected in individual septic tanks and dispersed in a tile field.

The community centre is presently under construction and should be completed this fall. This facility, which will have an area of approximately 412m^2 (4430 sq. ft.), will house both recreational and commercial uses. The intended uses are: a recreational area, showers, convenience store, laundromat, office space, and a coffee shop.

Caslan Metis Enterprises, a garment factory, was established on the Settlement with a local Board of Directors. One of the aims of this new venture was to provide employment for local residents; and thereby, provide them with an incentive to remain in this community. Sinclair Hall was renovated to house this factory. The funding source for the required renovations was the Alberta North Agreement's Community Development Program (McArthur, 1982), while the equipment was funded through the MDR (Municipal Debt Reduction) fund (Patenaude, 1983). A training program by the Canada Employment Centre at St. Paul helped train 9 staff members. In early 1982, Caslan Metis Enterprises began to manufacture parkas for Beaver Lake Fashions and Sportswear.

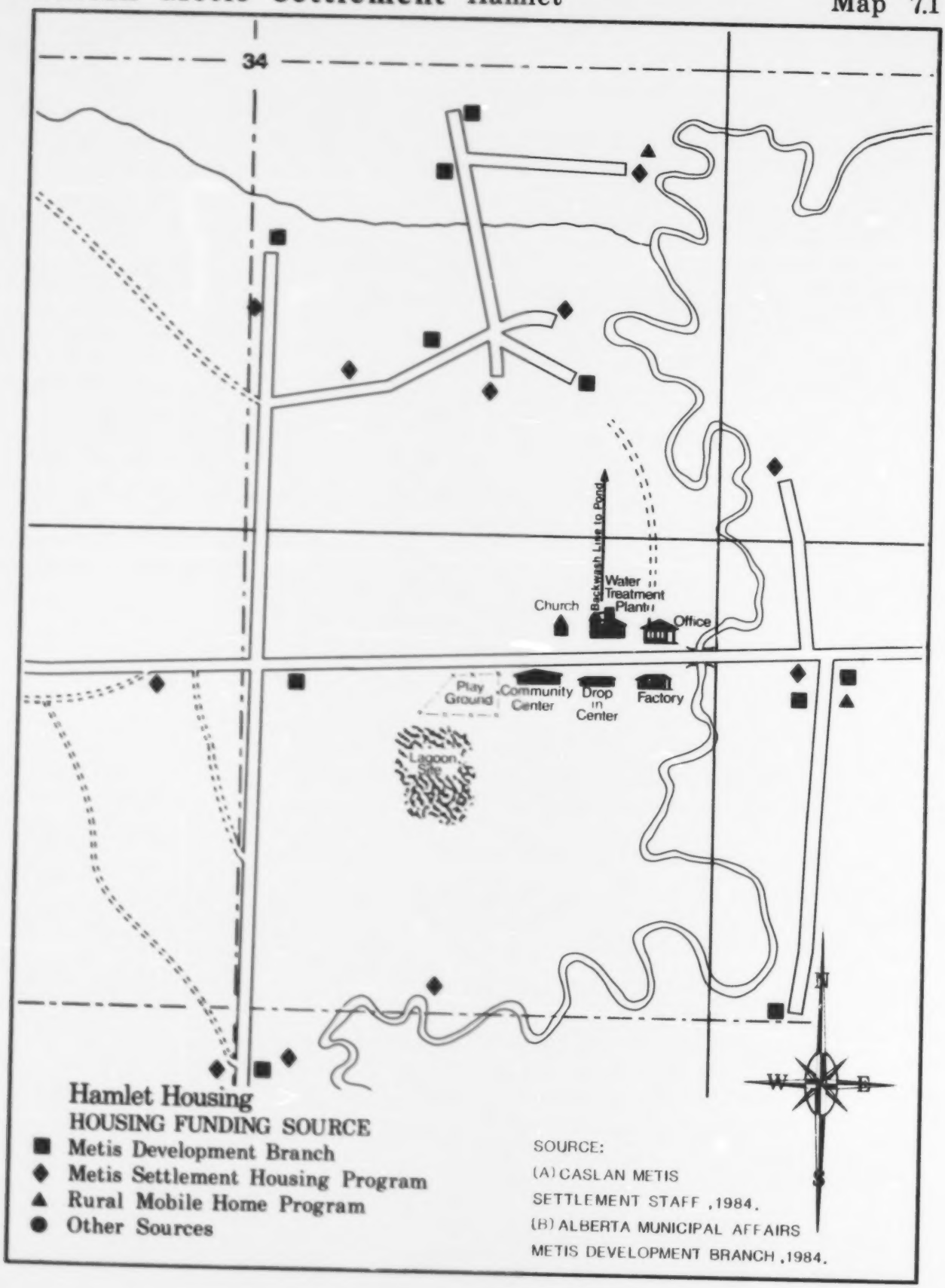
Due to the depressed market for their production, the factory has had to cease operations periodically. The factory is operational at the present time, but not at full capacity. Only about 2 or 3 local residents are presently employed at the factory.

Other community-oriented facilities and/or commercial enterprises could ideally be located within the hamlet. Types of facilities or enterprises acceptable or desired should be determined so that they could be incorporated into the hamlet area in an orderly fashion.

There is a higher concentration of residences in the area north of the Settlement Administration Office. Considerable infilling could occur in this area if Council so desired. Creating and maintaining higher densities here could have several advantages. First, it would create an alternate housing and lifestyle for people who do not wish to have or need large farm-type parcels. This lifestyle could be attractive to the elderly and would eliminate a need to commute long distances to community facilities. Families engaged in non-agricultural type pursuits could also settle here. Second, higher densities would create favourable conditions for more social interaction and a higher standard of municipal services. The municipal services could include communal water and sewage systems, as well as regular garbage collection and better roads.

Caslan Metis Settlement Hamlet

Map 7.1



Hamlet Housing

HOUSING FUNDING SOURCE

- ■ Metis Development Branch
- ◆ Metis Settlement Housing Program
- ▲ Rural Mobile Home Program
- ● Other Sources

SOURCE:

(A) CASLAN METIS SETTLEMENT STAFF ,1984.

(B) ALBERTA MUNICIPAL AFFAIRS METIS DEVELOPMENT BRANCH ,1984.

RECOMMENDATIONS for LAND USE

8.0 Recommendations for Land Use

8.1 Identification of Land Use Alternatives

The intent of this portion of the Report is to suggest the best uses for the undeveloped Caslan Metis Settlement lands. All suggestions for the future uses of this undeveloped land would require that consideration be given to factors of a physical and socio-economic nature. The physical factors, such as climate, topography, and soil conditions, have been discussed in some detail earlier in the Report and will be alluded to again in this section. The socio-economic factors considered when suggesting new enterprises are:

(a) the cultural compatibility of the new enterprise;
(b) the availability of the physical resources (land, water bodies, etc.) required for the initiation of the enterprise;
(c) the availability, locally, of adequate skilled manpower to manage and operate the enterprise;
(d) the costs to be incurred for development of the enterprise; and
(e) the markets for the products to be produced.

Upon consideration of all of the above factors as they apply to conditions on the Caslan Metis Settlement, the final choices for the undeveloped lands are agriculture, cattle ranching and wildlife game ranching.

8.2 Proposed Land Uses

8.2.1 Agriculture

The culture and lifestyle of the residents are closely linked to the environment. Farming, which uses the resources of the land to create a livelihood for the residents, has been extensively practiced by the residents and is considered culturally acceptable. It should be noted that the magnitude of the farming operations should be considered in a local context. Many of the Settlement residents have been settling on 64.6 ha (160 ac) parcels. As farm parcels of this size are not viable farming units because of the poor soil and climatic conditions in the area, it is expected that residents would be required to seek other employment opportunities to supplement their farm income. It is hoped that these employment opportunities could be made available locally to those farmers requiring the additional income.

At the present time there are in excess of 525 ha (1300 ac) of cleared and cultivated land on the Settlement, and more could be developed when the required road networks are completed. Equipment for clearing the land is available locally which should lower development costs. Most of the residents engaged in farming appear to have a basic understanding of the mechanics of farming. Training to upgrade their skills in farming could be made available and this matter could be discussed with the District Agriculturist. Monetary rewards received by those residents actively involved in farming have not been too satisfying in the past; however, this condition could change in the future.

The major focus for agricultural activity has been the northwestern portion of the Settlement. Expansion of the agricultural activity from this northwestern portion is expected to occur in a southern and easterly direction. As land for agricultural purposes is better in some areas than in others, a staging of expansion of this agricultural land is suggested here. The staging, which is indicated on Map 8.1, was determined upon consideration of the following criteria:

(a) the proximity of existing developed agricultural areas to the undeveloped;

(b) the topography of those areas proposed for agricultural use; and
(c) the presence or absence of C.L.I. (Canada Land Inventory) Class 4 Capability soil for agriculture in an undeveloped area.

Area 1 presently contains most of the developed agricultural land on the Settlement, and could be fully developed when the required utility and road networks have been completed. The staging of the development of land from Area 1 to Area 2 suggests a bypassing of adjacent lands and the development of undeveloped land some distance away (see Map 8.1). This type of "leap frogging" development, while generally considered a poor planning practice, is an approach followed in this instance because of the unique circumstances found here. The criteria for staging of development, which are outlined above, suggests that the staging of land development be towards undeveloped land with the best soils and the gentlest slopes. Areas 2, 3, and 4 each contain some land with soils having a C.L.I. Capability of Class 4. This class of soil is the best soil on the Settlement. The slopes on all the land within these three areas are less than 9% which are ideal for cultivation. Area 5, being adjacent to Area 4 and having slopes less than 9%, is suggested for development after Area 4.

Areas 6 and 7 have land with slopes ranging from 9% to 15%, which are less ideal for the cultivation of land. This adverse topography is one of the factors which cause the land in these two areas to be rated as C.L.I. Capability Class 5 for Agriculture. Land with Class 5 soil is considered to have severe limitations to grain production and is suggested for the growing of limited types of forage crops. Areas 6 and 7 were initially suggested for agricultural development together with Areas 1 to 5 because such a land unit would result in a compact land area that could be developed in an orderly fashion as required by the first criterian for staging of development. In view of the limited potential for crop production in Areas 6 and 7, it is suggested that no further development occur in these two areas until Areas 1 to 5 inclusive have been developed. Such non-agricultural uses as forestry could be introduced into these two Areas on an interim basis. Land in these two area has a C.L.I. Capability Class 4 soil for forestry. Soil with a Class 4 rating has only a moderately severe limitation to commercial forest production. In addition, portions of these two areas would be suitable for country residential type use if a need for such use arose at some future date.

8.2.2 Cattle Ranching

Cattle ranching is the second option considered for use for the undeveloped land on the Settlement. There is a fenced community pasture in the northwestern portion of the Settlement which could serve as a base for a ranching operation. Portions of this fenced area contain meadows and water bodies which could provide a suitable area for ranching. Within this pasture area, however, are forested expanses which detract from the area's suitability for ranching. Ranching and forestry are not compatible uses because intensive use of forested areas by cattle would result in interference with the natural surface drainage. Continued use of forested areas by cattle would cause the land to be unsuitable for both ranching and forestry (A. Pollock, 1984).

To maximize usage of the pasture area, some improvement to this area by brushing and planting of suitable forage crops should be undertaken. Some equipment for clearing the land is available on the Settlement. As some forage crops are more suitable for local conditions than others, the choice of crops to be used should be discussed with the District Agriculturist to make the most efficient use of available land resources.

The area to be developed for ranching should be large enough to sustain a predetermined number of cattle. Areas not required for pasture could be turned over to other uses. For example, there is some land east of Areas 2 and 3 included in the fenced pasture area that contains C.L.I. Capability Class 4 soil. If the pasture area were to be made smaller to better reflect the number of cattle available to use this area, then the land with the C.L.I. Capability Class 4 soils should be withdrawn from use as pasture and used for the cultivation of crops.

Ranching on the Settlement has been in a state of decline in recent years because of low returns on livestock sales. As livestock prices are generally cyclical, there is reason to believe that they should improve in the near future. The existing ranching operations on the Settlement, in most cases, have been combined with farming. Much of the grain raised on the Settlement has been cut for green feed to be used as winter feed for livestock. The combination of the field source, together with additional pasture area that would be created, should make ranching a more viable commercial operation.

8.2.3 Wildlife Game Ranching

Wildlife game ranching is the third operation to be considered for undeveloped lands on the Settlement. The area suggested for this type of operation is the southeastern part of the Settlement (see Map 8.1) Game ranching may be defined as "the keeping of wild mammals, principally large ungulates, either in fenced enclosures, or under surveillance, so that systematic harvesting of meat is possible" (Telfer and Scotter, 1975).

Care should be taken in choosing the ungulates to be maintained by the game ranch as some species compete for the same food source. Bison utilize grasslands and sedges (solid stem marsh plants), while moose favour shrub species and aquatic plants. Elk prefer a balance between browse and grasses, while deer select high quality browse and herbage. This would indicate that bison would not compete with either moose or elk. Elk in high densities may be able to exclude both mule deer and white-tailed deer. Whitetailed deer appear to exclude mule deer from areas where they overlap (Telfer and Scotter, 1975).

The area required for the game ranch would depend upon the number of ungulates to be maintained. The wildlife reserve at Kikino has a total area of 10 square miles and will support about 500 ungulates. Once this carrying capacity is reached, it will be possible to harvest approximately 125 head per year, a third of which will be bison (Energy and Natural Resources, 1979). It is expected that a similar number of ungulates could be maintained in Caslan if an area of similar size could be obtained.

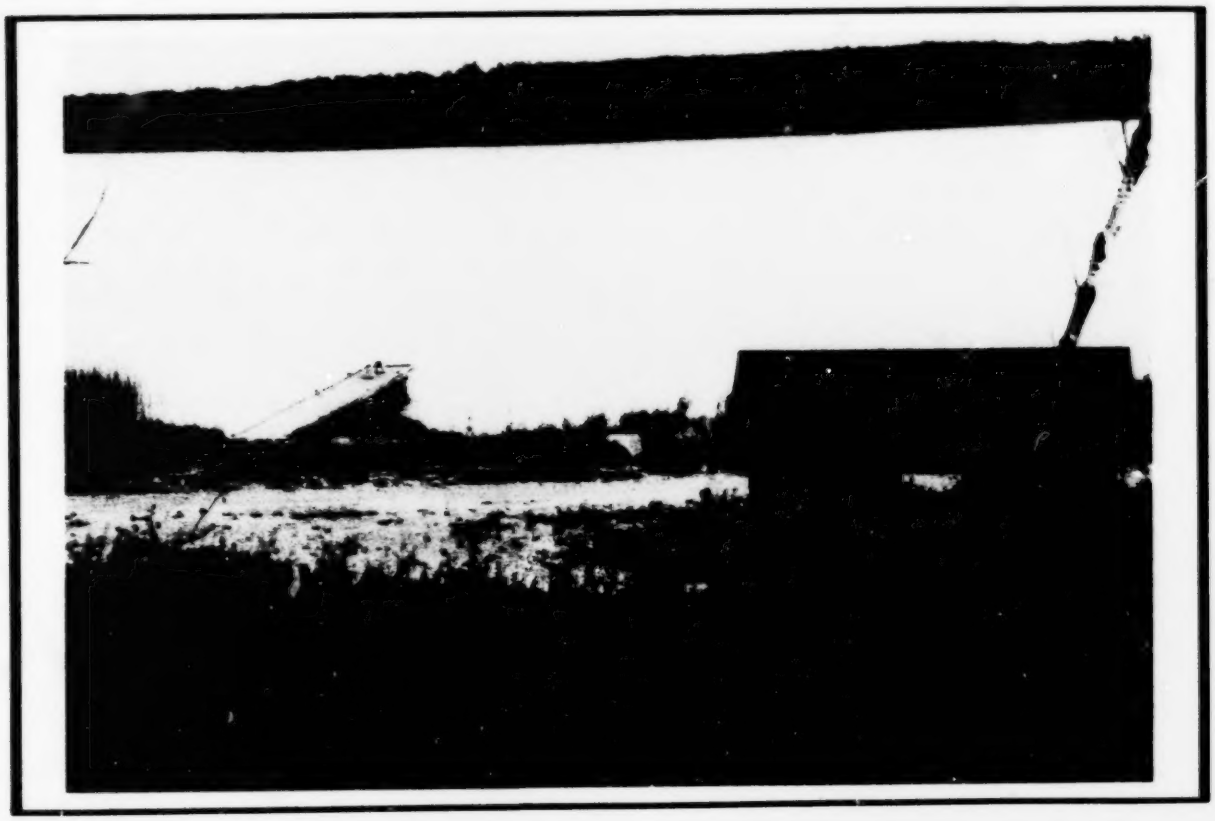
Recreational hunting is the least complicated means of harvesting animals because a hunter pays a stipulated sum for the privilege of hunting and removes his animal. While this approach to harvesting results in a lack of control to some degree in the selection of animals that are harvested, it may be the best approach at the initial stages of development (Telfer and Scotter, 1975). The marketing of meat products, which is another means of operating a game farm, is more complicated as it requires careful co-ordination of supply, processing, and marketing. With the exception of reindeer and bison, game meat has not been marketed in Canada (Telfer and Scotter, 1975).

Forestry production and game ranching appear to be compatible uses. In aspen forests, complete removal of the forest cover will produce dense stands of 35,000 to 60,000 suckers (new growth) per acre. As only 1,000 to 6,000 suckers per acre are needed for complete forest restocking, there will be a large supply of browse for the animals (Telfer and Scotter, 1975). Harvesting of the forest should be in blocks so as to provide patches of food and shelter for the animals.

Other possible uses, that are compatible with forestry and game farming, could include viewing of the wildlife. In Elk Island Park, nature lovers, hikers picnicers and general visitors use the same areas as the wildlife with no serious problems.

Fish farming is another type of wildlife type enterprise which could be established on the Caslan Metis Settlement some time in the future. At the present time, fish farming is not permitted on Metis Settlement lands because of the wording of Alberta Regulation 149/70 (5), which provides that game fish farming can only take place within bodies of water surrounded by private lands. When such a venture becomes possible on Metis Settlement lands, staff from Fish and Wildlife would be available to provide the necessary technical assistance to get the fish farming operations started.

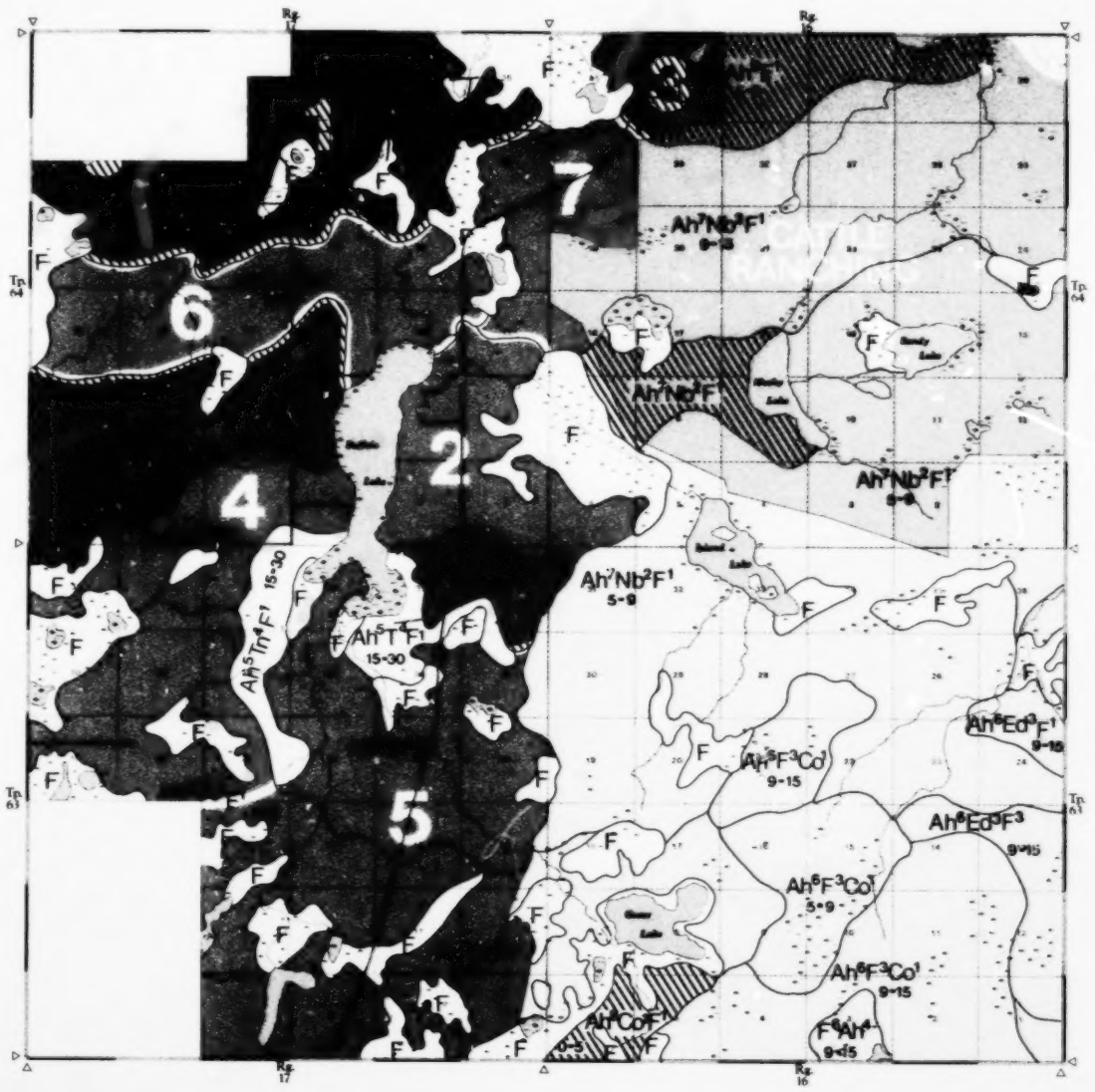
The game fish farming is normally only a seasonal operation. Fingerlings, generally of a Rainbow Trout species, are released into a stream in the spring to be harvested in the fall. It is expected that the fish would be used to provide a supplemental food source to the Settlement residents as well as a game fish for Anglers. Commercial markets off-Settlement for the fish would be difficult to establish because of the seasonal nature and the inconsistent quality of the product (Kendall, 1984).



Caslan Metis Settlement

Map 8.1

Future Land Use



Legend

Ah[8] 5-9 ← Slope of Land in Percent

Proportion of Soil Type in Area (in tenths)

Soil Type

Class 4 Type Soil

Agricultural Staging

Cattle Ranching

Wildlife Game Farm

N

W E

S

Scale — 1:125,000

Km. 3.2 1.6 0 .8 Km.

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